

THE FIRST  
B.R.  
DIESEL-  
HYDRAULIC

See Advert. Page 5



"THE TIMES" OF THE TRANSPORT WORLD

EXPEDITING  
BRANCH  
LINE  
CLOSURES

See Page 2

VOL. LXXIX No. 2054

[Registered as the G.P.O.  
as a newspaper]

LONDON, AUGUST 9, 1958

PRICE NINEPENCE

## The Licensing Reports

WHEN postwar publication of the annual reports of the licensing authorities for goods vehicles was resumed in 1950 an apologetic foreword told readers that they were now reproduced only in summarised form because of "the need for economy in paper and printing." Soon this became "the interests of general economy" and now it is, blandly, "the usual summarised form." This is obviously in danger of becoming the usual excuse for doing nothing better, both here and on the passenger side. It is rather adding insult to injury since two-thirds of a slim document are taken up with a repetitious series of tables which need never go beyond the archives of the licensing authorities themselves. Their place could be taken with much meatier fare in the form of more extended comment on proceedings in the traffic courts and their inferences. Never before, in fact, was it so important that the accumulated and distilled wisdom of the licensing authorities, on such burning topics as normal user; breach of licence conditions; and enforcement, should be accorded a full hearing. They are on the ground floor and the industry has the right to know what is in their minds, not merely in relation to the facts of a single case but in the wider context. By the time that the next reports appear licensing will have run a full 25 years; that seems as good an excuse as any for adding a few pages on a chapter in history.

## Divergent Views on Covent Garden

TRAFFIC problems associated with Covent Garden market are of such magnitude that they can only be solved satisfactorily by its complete removal to another site. The London and Home Counties Traffic Advisory Committee, in its report on 1957, is adamant on this point, even to the extent of disagreeing with the major recommendation of the Runciman committee, which was that, by improving other markets, a smaller Covent Garden market had a useful function as a price setter, sampling centre and a centre for direct distribution to the retail trade. Clearly the cleavage of opinion here turns upon the interpretation which is given to the recommendation for dispersal. If Covent Garden in fact became a sampling market and little else the traffic problem would be materially eased, but the London traffic committee fears that too little weight was given to the traffic issues involved; it sees this remedied only if the proposed markets authority includes at least one member who can undertake the detailed decisions on this point which would arise in respect of other London markets—assuming that Covent Garden were removed lock, stock and barrel. Elsewhere in the report one reads that during 1957 the Stopping Places Advisory Committee made recommendations in respect of 279 bus stopping places, bays or shelter sites where London Transport, the police and local authorities could not reach "full agreement"; which party won and how often is not disclosed.

## Report on Road Research

UNDER the title *Road Research 1957*, the annual report of the Road Research Laboratory, published for the Department of Scientific and Industrial Research by H.M.S.O., price 5s. 6d. (6s. by post) or 99 cents in U.S.A., calls attention to the urgent and complex problems raised by the rapid traffic growth of the country which, if continued at the present rate for another nine years, will result in a doubling of the present number of motor vehicles. A study of traffic trends has indicated that the whole traffic is increasing at a rate of 7 per cent a year but the mileage by cars, motorcycles and goods vehicles has been increasing at a greater rate, as that of public service vehicles appears to have passed its peak and that of pedal cycles is declining. The report gives many facts established over the past few years by that part of the research programme devoted to questions that would help the authorities in shaping a road policy. These questions were

concerned with determining which roads carried the bulk of the traffic; the monetary value of traffic delay and methods of economic assessment for use in deciding road improvement priorities; and the economic effects of the London—Midlands motorway and of the improvement of existing roads. The Road Research Board outlines plans for the laboratory for the period 1959-64 and recommends an increase in effort of at least 50 per cent. It says that much of the increased research should be devoted to traffic and safety problems but that there should also be an expansion of work on materials and construction methods. Few

degrees on other busy sections where industrial traffic on alternative road connections is heavy. On the other hand, the committee dismisses as over-optimistic suggestions about the greatly diminished congestion, and consequently increased safety, on the roads which would result from diverting commercial traffic to re-vitalised waterways. Relative slowness of waterway transport is found to be a handicap unless offset by the advantages of carrying large loads yielding good results in ton-miles per man-hour, and the committee agrees that only in favourable conditions can waterways provide a means of transport satisfactory to

# CURRENT TOPICS

## LEADING FEATURES IN THIS ISSUE

Portrait	PAGE		PAGE
Mr. J. F. Harrison, M.I.Mech.E., M.I.Loco.E. . . . .	9	Indian Diesel Railcars: Australian- built with B.U.T. Equipment . .	12
<b>Special Articles</b>		Widened Scope of Locomotive Manu- facturer: Beyer Peacock (Hymek), Limited . . . . .	14
Expediting Branch Line Closures . .	2	<b>Modern Airways Section</b>	
British Railways Performance Tests: Report on English Electric Deltic Diesel-Electric Unit. By E. C. Poultny . . . . .	3	Aer Lingus in 1957-58: Profit on Operating Account . . . . .	13
Human Element in Rail Collisions: The St. Johns and Dagenham East Accident Reports . . . . .	5	<b>Regular Features</b>	
The Aberdeen Tramways: End of an 84-year Era. By Michael H. Waller . . . . .	6	Commercial Aviation . . . . .	9
Commercial Vehicle Test No. 450: Albion Claymore Underfloor- Engined 5-ton Lorry . . . . .	7	Financial Results . . . . .	16
Plastics Publications in French . .	9	Forthcoming Events . . . . .	2
S.R. Progress at Hastings: Auto- matic Train Washer: Buffet Cars	10	Important Contracts . . . . .	16
		In Parliament . . . . .	9
		Lorry, Bus and Coach News . .	4
		News from All Quarters . . . .	8
		Road Vehicle Industry . . . . .	11
		Shipping and Shipbuilding . .	16
		Social and Personal . . . . .	15
		Tenders Invited . . . . .	16

will be found to cavil at the proposed expansion for its cost is likely to be a very minute proportion of the savings in many directions already effected as a result of the work of the Road Research Laboratory, which has won the approval and co-operation of a majority of organisations with widely varying interests in roads and road transport.

## Canal Traffic in Perspective

THE proposals on inland waterways of the Bowles Committee, whose report was dealt with in our last issue, must be considered in the light of the contribution the canals can make to transport as a whole. Prospects are not encouraging, except indeed on the barge canals and navigable rivers to which the Commission is devoting its £5½ million development scheme. The report itself points out that the tonnage moved by rail is some 27 times that carried by British Waterways and that the ton-mileage performed on inland navigations is equivalent to less than one per cent of that of the railways. Messrs. Glover and Miller, in their valuable and oft-quoted paper to the Royal Statistical Society, estimated that road transport in 1952 moved 19,000 million ton-miles; the figure must be considerably higher today. Asked by the committee to evaluate in terms of road vehicles the equivalent of a hypothetical 50 per cent increase in the ton-mileage performance of the waterways, the authors of the paper estimated this to represent the performance of only 300 5-ton lorries. But whilst in terms of the country's inland transport as a whole the contribution is small some of the individual waterways perform valuable service. As an example the committee quotes the Lee, whose two million tons of traffic a year would be a troublesome addition to the congestion of road traffic between the London docks and Lee-side premises if the waterway were not used; in view of the preponderance of short-haul traffic on waterways this consideration applies in varying

users, at lower cost or greater convenience than road or rail—and then, one might add, mainly when it is destined for waterside premises.

## Extraneous Uses of Canals

MANY waterways which traffic has largely forsaken have much to commend them. They often traverse attractive country and sometimes enhance it, bringing water, and associated vegetation and wild life, into otherwise unwatered areas. With the growth in opportunities for leisure the need for the preservation of amenities increases. Of the recreational functions of waterways the committee mentions angling, not to disparage the value of other, such as sailing, rowing and rambling, but because of the evidence of its widespread use, pointing out that hundreds of thousands gain pleasure from this hobby on the waterways. "Many are town-dwellers, and whilst this enhances the value to them of available fishing near towns, their keenness is also shown by the long distances they are prepared to travel to pursue this sport . . . We believe that the enjoyment of this open-air relaxation by so many people promotes the well-being of the community in a very real way." No one will dispute this assertion, which lends emphasis to the need for relieving the British Transport Commission of responsibility for maintaining waterways which have long since lost their value as transport media but whose retention is a community interest. Some canals were the work of engineers of acknowledged genius. They include aqueducts and other structures impressive in themselves and reflecting the high standards of design and craftsmanship characteristic of their time; there are also works of considerable interest as examples of the mechanical achievements of the early industrial revolution. In such cases also there will be general agreement with the committee's assertion that avoidable destruction would be deplorable. Responsibility again is a communal one, to be covered by the Exchequer.

## Bradford Diamond Jubilee

ALTHOUGH Holroyd Smith, who built the Blackpool conduit tramway opened in 1885, had carried out an experiment with overhead electric traction in Cheapside in 1892, it was not until July 30 six years later that Bradford Corporation began electric tramway operation on its own lines. Only on February 1, 1902, did the lines of the Bradford Tramways and Omnibus Company, dating from 1882 and operated by steam traction, come into the Corporation's hands. The 4-ft. gauge electric trams had some stiff gradients to surmount and one experiment was with a high-speed car with the four wheels on the motor bogie coupled by side rods. From 1909 to 1914 through cars ran to Leeds, the gauge being widened to 4 ft. 8½ in. by a patent device on the cars as they passed from one system to the other at Stanningley. The last tram in public service ran to Odsal on May 7, 1950, but No. 104, which has been renovated by enthusiasts, was operated in Thornbury works to mark the diamond jubilee, which was also made the occasion of a transport department luncheon. Bradford initiated trolleybus operation on June 24, 1911, from Laisterdyke to Dudley Hill, and still in the early days carried out freight trolley experiments; in 1922 the Corporation built a four-wheel steering six-wheeler. At present there are 46½ miles of trolleybus route, against 91 miles of motor bus route. The motor bus was a late comer, the first going into service for Bradford Corporation on May 14, 1926.

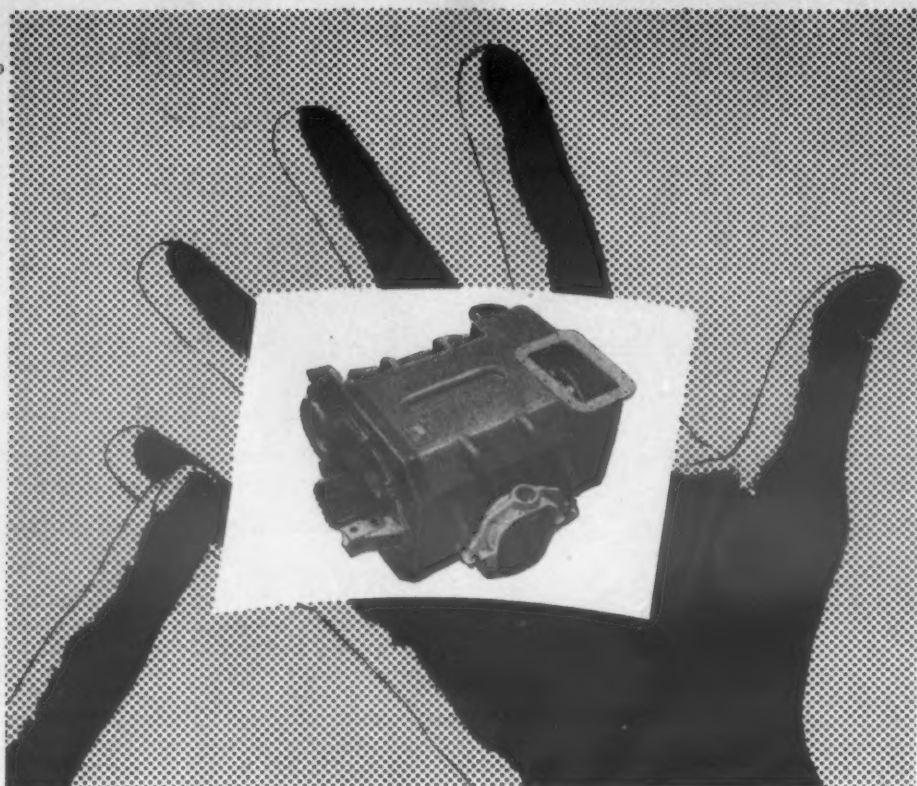
## Disappointing Year for B.O.A.C.

THE report and accounts of the British Overseas Airways Corporation for the year ended March 31, 1958, show a substantial loss and it was certainly expected that, in view of all its difficulties during the period, the corporation would not be able to show an overall surplus as it did for the previous year. In view of all the circumstances it was not unsatisfactory that there was, despite the North American recession and other unexpected developments, a marginal operating profit of £129,122 out of the total revenue of £53,526,375. Thereafter it was necessary to provide interest payments on capital of £2,377,724 and to meet losses by associated companies of £590,748 so that the overall deficit reached the substantial figure of £2,839,350. It cannot have been a happy year for the corporation even if it had the consolation of knowing towards its end that the main troubles associated with the introduction of the Bristol Britannia were over. There is every intention of pushing ahead with plans for expansion and the report repeats the anticipation of putting the de Havilland Comet 4 into service before the end of this year, probably on the North Atlantic route. Thereafter there will be the Boeing 707s for these services and then a reversion to a British product in the shape of the Vickers VC10. This aircraft promises greater and greater versatility as design work continues.

## Cost of Development

THE chairman of B.O.A.C., Sir Gerard d'Erlanger, has expressed the view that there should be some form of Government assistance towards the heavy cost of development flying with new types of aircraft and an approach has been made in that regard. It is, of course, possible to cite Air France as an example of where that has been done or, alternatively, the substantial military orders which United States manufacturers have been able to use to back development of new types. Within its own organisation B.O.A.C. is striving hard to reduce engineering costs and this is vital to truly economical operation. A close study of the organisation of three other airlines with aircraft operations and standards similar to those of the corporation established the need for fundamental revision of its engineering organisation and methods. The necessary steps are being taken and discussions with representatives of those likely to be affected began last January. All other departments are considering ways of improving their efficiency.





## 4 regions . . . 1 motor

Crompton Parkinson are building the electrical equipment for 93 new main line diesel locomotives: forty-five of 1550 h.p. for the Southern Region; twenty of 1160 h.p. for the Eastern and North Eastern Region; eighteen of 1160 h.p. for the Scottish Region; and ten of 2300 h.p. for the London Midland Region. To make possible economies in future maintenance and the supply of spares, one design

of traction motor is used throughout these various contracts; four per locomotive up to 1550 h.p., with six of each for the 2300 h.p. locomotives.

The motors, C.P. type C.171, are forced ventilated, and have a bonded-rubber nose suspension. They have been specially designed for diesel-electric duties and are particularly easy to maintain.

### Crompton Parkinson LIMITED

Member of **ATOMIC POWER CONSTRUCTIONS LTD.**

One of the five British nuclear energy groups

TRACTION DIVISION, CHELMSFORD, ESSEX

TELEPHONE: CHELMSFORD 3161. TELEGRAMS AND CABLES: CROMPARK CHELMSFORD



## BOLTON'S PRODUCTS

contribute to the 'English Electric'

"DELTA" locomotive

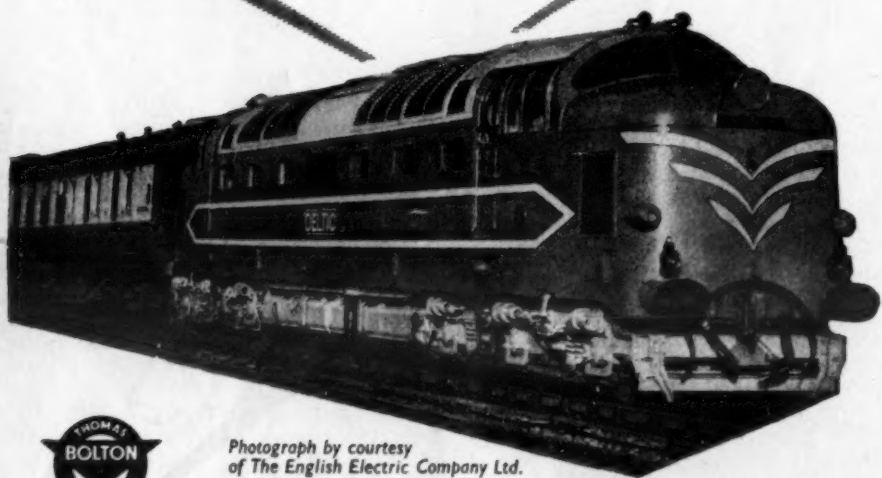
### BOLTON'S H.C. COPPER

commutator bars and segments were used in the generators, main motors, and auxiliaries.

### BOLTON'S ALUMINIUM-BRONZE

machined parts were incorporated in the Napier Delta diesel engine.

Thomas Bolton & Sons Ltd are manufacturers of copper and copper-base alloys in the form of wire and strand, bar and rod, sheet, strip and foil, busbars, commutator and other sections, and tubes.



Photograph by courtesy  
of The English Electric Company Ltd.

### THOMAS BOLTON & SONS LTD

Head Office: Mersey Copper Works, Widnes, Lancashire  
Telephone: Widnes 2022

London Office and Export Sales Department: 168 Regent Street, W.1.  
Telephone: REGent 6427



Published Every Friday

RUSSELL COURT, 3-16 WOBURN PLACE,  
LONDON, W.C.1

Telephone Number: TERN 0303 (3 lines)  
Telegraphic Address: Transpubco, Westcot, London

ANNUAL SUBSCRIPTIONS

BRITISH ISLES, 35/-; CANADA, 32/6;

ELSEWHERE ABROAD, 35/-  
payable in advance and postage free

*The Editor is prepared to consider contributions offered for publication in MODERN TRANSPORT, but intending contributors should first study the length and style of articles appearing in the paper and satisfy themselves that the topic with which they propose to deal is relevant to editorial requirements. In controversial subjects relating to all aspects of transport and traffic this newspaper offers a platform for independent comment and debate, its object being to encourage the provision of all forms of transport in the best interests of the community.*

### Expediting Branch Line Closures

ANTECEDENT to the recent increase in railwaymen's wages the Prime Minister on April 22 received union leaders and members of the British Transport Commission at 10 Downing Street. In discussing ways and means towards higher labour remuneration he pointed out that the surest road to greater efficiency and productivity was the modernisation programme. With this desideratum he coupled "a more intense programme for pruning the railway services by reducing or cutting out uneconomic services." Provided that the Commission and the unions would effect maximum economy in operation and would join in ensuring the most efficient use of manpower the Government, he said, was prepared, amongst other things, "to give any necessary support to the reductions in uneconomic services." What is to be the nature of this support? The statement obviously presaged an intensified drive towards the closing of unremunerative stations and branch lines; it also presupposed a hastening of the procedure for doing so, and especially that of the Transport Users' Consultative Committees, whose principle task is to examine and report upon such objectives. An idea of the complexity of the procedure is conveyed in the 1957 report of the B.T.C., reviewed in our issues of June 28 and July 5 last. Stating that during the year the consultative committees supported proposals for the closure, or partial closure, of 10 branch lines and the closing, in addition, of 60 stations, the report refers to the pains taken by the committees to probe each case, often entailing the appointment of sub-committees to examine the proposals in detail on the ground.

### Consultative Committee Procedure

AS an example of this meticulous procedure the report quotes the Welsh committee's consideration of the proposed withdrawal of the passenger service between Merthyr and Abergavenny. In this case the committee received objections from 11 local authorities, seven other public bodies and a petition signed by 1,125 local residents. It listened to deputations; considered the matter at four meetings in five months; inspected the line; dealt in detail with every objection, and finally agreed unanimously with the Commission's proposal, estimated to effect a minimum net saving of £59,000 a year. The report goes on to say that "a substantial saving was also estimated to accrue from the closing of the Lewes—East Grinstead line which the consultative committee for the South East had approved in 1954 after careful consideration. The subsequent discovery of a legal impediment, followed by the Ministry's decision to have the whole case re-examined by the Central committee, led to further delay, and it was not until March of this year that the branch was finally closed after that committee had confirmed that this course would be in the public interest." It is this sort of delay, actuated sometimes by political considerations, that must be avoided in the future. Indeed, in the matter of effecting operating economies time is vital to the Commission. In most cases several valuable months are occupied in consultative committee procedure, and more months are taken up in the preliminaries and in the final steps before closing. Can this time be reduced? Much, of course, depends upon the nature and extent of the committees' co-operation, which has been reasonable in the past but will have to be still more readily available in the future.

### Encouraging Expedition

IN furtherance of Government policy regarding the B.T.C. the Minister of Transport told the House of Commons on May 21 that he was "seeing the chairman of the Central Transport Consultative Committee"; in this respect, beyond stressing the need for more frequent hearing of objectors and speedier preparation and submission of findings there was doubtless little the Minister could do. Answering further questions in the House on June 23 he said that he had met all the chairmen of the consultative committees and informed them that the Government intended to support strongly the Commission's plans for eliminating hopelessly uneconomic services; over 30 branch lines, in addition to the Midland and Great Northern Joint, are scheduled for closing and will be submitted to the committees within the next few months. Does the Minister's action go far enough? There are obvious difficulties in expediting the business of the consultative committees; in their corporate capacity they have other things to attend to and their members, representing agriculture, commerce, industry, shipping, labour and local authorities are busy men. But the Commission also is represented on all the committees, for whose secretariats it is financially responsible, and it thus has the means for stimulating and maintaining in those bodies an awareness of the urgency of branch line procedure. Railway officers are prominent members of local chambers of commerce, and railwaymen throughout the country are members of municipal authorities; all these could further the cause, with the advice and encouragement of the Commission. Such efforts, if strenuously pursued and sustained, would go far towards persuading the various public bodies of the importance and significance of the railway problem and would assist also in educating the public towards accepting the withdrawal of transport services which have proved hopelessly unremunerative.

### Scope for Savings

WHILST it is possible to over-emphasise the importance of the contribution to all-over economy represented by the savings accruing from the closing of unremunerative lines and services the prospective total must amount to several millions a year. Minimum annual savings effected in 1957 in the closing of branch lines and withdrawal of services were estimated at £137,767, making the total of such savings since 1950, or roughly since nationalisation, £1,677,121, towards which England contributed £1,222,609, Scotland £290,613 and Wales £163,899. Net savings of some £500,000 a year are anticipated from the closing of the M. & G.N. line. This scheme, which covers 180 miles of track, is, of course, exceptional, but it is an indication of what can be done by careful planning of a closure over a fairly wide area when alternative services are available. The problem of providing alternative services is accentuated by the rising costs of bus operation. Presiding at the recent annual general meeting of the British Electric Traction Company, Mr. H. C. Drayton, warned that they could no longer afford to run so large a proportion (approximately 40 per cent) of unremunerative route mileage; the loss on these routes, he said, had increased while the surplus from the profitable routes had decreased. In these circumstances it is not surprising that in some cases an alternative service by road can only be secured in return for a guarantee by the Commission against loss, although, as the Minister reminded the House on July 23, it is under no obligation to provide alternative services. Nevertheless, the B.T.C. has not yet reached the happy position, envisaged for C.I.E. in the Republic of Ireland Transport Bill, of being able to abandon lines and services where and how it likes and regardless of the consequences, and it is entitled to every encouragement in the limited steps which it can take.

### Forthcoming Events

August 10.—Railway Correspondence and Travel Society. "Northern and Eastern" Rail Tour.  
August 17.—Omnibus Society (Midland and North Western). Visit to Potteries area independent operators.  
August 21.—Institute of Road Transport Engineers (Metropolitan). Visit to L.T.E. Works, Aldenham.  
August 24.—Omnibus Society (Northern). Visit to Northern General Transport Co., Limited. Meet Chester-le-Street Depot, Gateshead, 2.15 p.m.  
September 1-7.—Society of British Aircraft Constructors. Flying display and exhibition. At Farnborough. (Public days September 5, 6 and 7.)  
September 5.—Railway Club. Re-Enactment by Mr. E. G. Carr. "The Great Bristol Contest of 1835." At 320 High Holborn, W.C.1. 7 p.m.  
September 8-12.—Municipal Passenger Transport Association. Annual conference. At Blackpool.  
September 8-13.—First International Congress of the Aeronautical Science. At Madrid.  
September 13-14.—Railway and Canal Historical Society. Visit to remains of Somerset Canal and railways, Dorset and Somerset Canal, broad gauge G.W.R. architecture and Kennet and Avon Canal features. Based on Bradford-on-Avon.  
September 26-October 4.—Commercial Motor Transport Exhibition. At Earls Court.  
September 26-28.—British Railways (Southern Region) Lecture and Debating Society. Weekend visit to Scotland including Thornton Marshalling Yard and the Forth Bridge.  
September 28-October 7.—International Railway Congress. At Madrid.  
September 29.—Passenger Vehicle Operators Association. Annual dinner-dance. At Grosvenor House, London.  
October 4.—Omnibus Society. Annual dinner at Clarendon Restaurant, Hamersmith, W.6. 7 for 7.30 p.m.  
October 13-15.—Road Haulage Association. Annual conference. At Torquay.  
October 26-31.—International Road Federation world meeting. At Mexico City.  
November 3-16.—International Motor Show. At Turin.



# BRITISH RAILWAYS PERFORMANCE TESTS

## Report on English Electric Deltic Diesel-Electric Unit\*

By E. C. POULTNEY, O.B.E.

THE most recent locomotive test report bulletin issued by the British Transport Commission has for its subject the English Electric Company's Deltic diesel-powered locomotive, which, since its completion in 1955, has been in main-line service on the London Midland Region, British Railways.\*

This large diesel-electric locomotive, specially designed by the makers for heavy main-line requirements, has already been fully described in MODERN TRANSPORT of October 29, 1955, and was again referred to in the issue of April 12 last; a detailed description will not be

The English Electric Deltic design develops remarkably high powers at the drawbar and in relation to the service weight of the locomotive.

In order to ensure satisfactory engine performance detailed logs of engine exhaust, cooling water and lubricating oil temperatures were also recorded. Similar procedure was adopted for tests made with only one engine in operation. In this case only four engine speeds were employed, i.e. 800, 900, 1,200 and 1,500 r.p.m. At certain engine speeds corresponding to the higher outputs of the locomotive, it was found impossible to cover all road speeds with any one combination of m.t.u.s.; several runs were, therefore, required to complete the characteristic.

Further, several characteristics had to be completed with data showing the results obtained from variable speed tests with fixed train loads. This applied particularly to speeds over 50 m.p.h. when using one engine only.

### Fuel Oil

The fuel oil used was sampled daily as tanks were replenished. The overall variation in calorific value was only 100 B.Th.U. per lb., and the average value of this fuel oil used throughout these trials was 19,530 B.Th.U. per lb. In a similar manner, variations in the specific gravity of the fuel were found to be 0.830 to 0.832, and 0.831 has been used in all calculations.

### Drawbar Characteristics

For each test condition at a fixed engine speed, drawbar tractive effort-speed curves were developed. In plotting there was found to be a certain amount of unavoidable scatter in the points obtained, attributable to the following causes. The sensitivity of the engine governors is such as to permit a variation of 50 h.p. more or less at any fixed controller position. Difference in engine speeds of 70 to 80 r.p.m. between the two engines at a fixed controller position produced a fall in power output at each of the field change

points, due to the unloading of one of the engines. Since variations in tractive effort or horsepowers are accompanied by corresponding fluctuations in fuel rate, the required definition of the character-

with one engine only, gives its maximum drawbar horsepower at a still lower speed of about 24 m.p.h. compared with about 40 m.p.h. at full power with both engines.

The powers developed by the diesel-electric locomotive are continuously available because they may be said to be mechanically fired, while the possible powers obtainable with the steam locomotive depend upon the capabilities of the fireman, which is well brought out by the curves in broken lines drawn to show the available drawbar horsepowers obtainable at firing rates of approximately 3,000 lb. of coal per hour, considered to be the limit for one fireman for continuous operation.

### Distribution of Power

The test report includes several interesting graphs showing how the power output by the engines as measured at the couplings between the engines and the generators is utilised. These curves indicate on a horsepower basis the extent of the series of power losses between the engine, or engines as the case may be, and the drawbar between the locomotive and the train. At high locomotive speeds, such as, say, 80 m.p.h., the total power loss is relatively high, due principally to the increase in the net resistance of the locomotive as measured by the difference between the power shown at the point of contact between the driving wheels and the rail, called the rail horsepower, and the horsepower available at the locomotive drawbar.

As a case in point, at 80 m.p.h. the combined output of the two diesel engines at full power is 3,250 b.h.p., while at the locomotive drawbar the power shown is just about 2,300 h.p. and at the rail 2,620 h.p. Assuming a locomotive speed of 60 m.p.h. and that the total power of the two engines is 3,250 b.h.p., the power available at the locomotive drawbar is 2,505 h.p., and the subdivision of the power losses, amounting to a total loss of 745 h.p., is as shown below. In presenting these numerical values it must be understood they are computed by sight from the appropriate graph in the bulletin.

1. Engine output, 3,250 b.h.p.
2. Generator input, 3,100 h.p. 1-2=losses due to auxiliaries.
3. Generator output and motor input, 2,890 h.p. 2-3=generator losses.
4. Rail horsepower, 2,675 h.p. 3-4=generator losses, including gearing.
5. Drawbar horsepower, 2,505 h.p. 4-5=losses due to the resistance of the locomotive.

The resistance of the locomotive, called the net resistance, is due to the weight of the locomotive rolling resistance, and the retarding effect of the head end air pressures. The net resistance of the locomotive lb. per ton is shown by a graph given in the bulletin for speeds up to 80 m.p.h. on a level tangent track. At 50 m.p.h. the locomotive resistance is 8.2 lb. per ton; at 60 m.p.h. it is

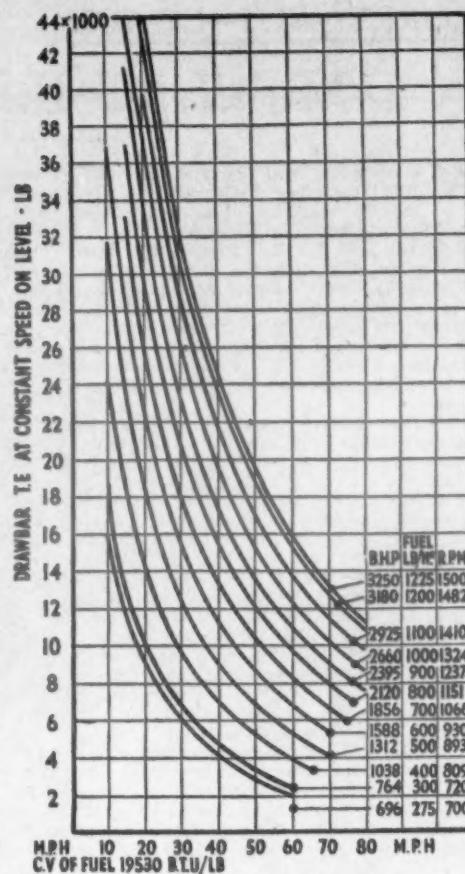


Fig. 1—Deltic tractive effort curves

ascending grades. It must, of course, be understood that the available tractive effort characteristics are arrived at by taking into account the varying resistances of the locomotive due to the different road profiles. These graphs are not now reproduced, but the following examples of the information given by these plots have been prepared to indicate the performance of the locomotive when operating with both the diesel engines handling trailing loads of 300, 400, 500 and 600 tons at approximately 60 m.p.h. on a level tangent track and on rising grades of 1 in 200, 1 in 150 and 1 in 100.

It will be noticed that there are in some instances considerable differences in the speeds shown. This is due to the fact that the intersection of a vertical indicating a given speed, m.p.h., with each of the two curves showing the available traction, d.b.t.e. and the total resistance to traction of a given train do not always coincide. The points of intersection between the available tractive effort and train resistance characteristics can be positively located, while the corresponding speed may be closely computed by sight. The performance with the heavy train of 600 tons shows that the full power of the diesel engines is required on the rising grades, the speeds falling from 62 to 45 m.p.h.

Grade	Speed m.p.h.	b.h.p.	Fuel rate oil lb./hr.
Level	300-ton train		
	60	1,030	400
	50	1,856	700
	40	2,130	800
1 in 200 up	60	2,130	800
	50	2,560	1,000
	40	2,560	1,000
	30	2,560	1,000
1 in 150 up	60	1,030	400
	50	2,130	800
	40	2,560	1,000
	30	2,560	1,225
1 in 100 up	60	1,312	500
	50	2,560	1,000
	40	3,180	1,200
	30	3,250	1,225
Level	400-ton train		
	60	1,312	500
	50	2,560	1,000
	40	3,180	1,200
1 in 200 up	60	2,560	1,000
	50	3,180	1,200
	40	3,250	1,225
	30	3,250	1,225
1 in 150 up	60	1,312	500
	50	2,560	1,000
	40	3,250	1,225
	30	3,250	1,225
1 in 100 up	60	1,312	500
	50	2,560	1,000
	40	3,250	1,225
	30	3,250	1,225

These results will no doubt be found of interest and, when considering them, it must be remembered that in all cases a tangent track is assumed; therefore, additional resistances to traction due to curvature are not taken into account. The performance data computed from the different graphs really summarise the test results and, when the detailed information required to be established by careful investigations is considered, the work involved before the overall picture can be completed will be appreciated.

### Road Trials

For the purpose of demonstration and verifica-

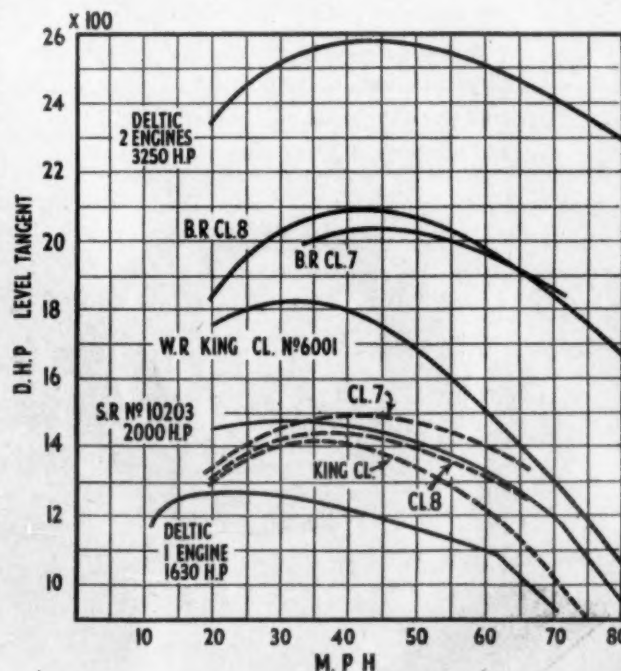


Fig. 3—Combined graph showing work of Deltic related to other B.R. motive power

tion of the locomotive characteristics obtained from the constant speed tests with the mobile test units, a load of 642 trailing tons, 20 coaches, was hauled with the locomotive working at maximum power with two engines over the London Midland (Continued on page 14)

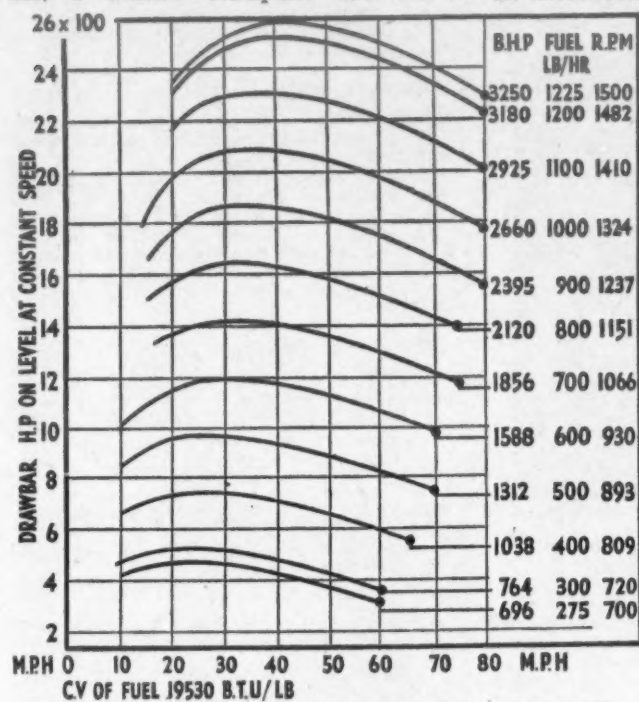


Fig. 2—Drawbar horsepower developed by Deltic diesel-electric locomotive

necessary, though the following particulars may be given as an aid to an appreciation of the results of complete performance and efficiency tests now available which form the subject of the present article.

### PRINCIPAL DIMENSIONS

Wheel arrangement	Co-Co
Weight in working order, tons	106
Maximum axle load, tons	18
Wheels, diameter, in.	43
Maximum tractive effort, lb.	52,000
Continuous tractive effort at 43 m.p.h., lb.	23,500
Factor of adhesion	4.57
Axle load + wheel dia. ft.	5.03
Number of Napier Deltic diesel engines	2
Continuous rating, b.h.p. per engine	1,630
Total locomotive b.h.p.	3,260
Crankshaft speed, r.p.m.	1,500
Total dry weight per engine, including mountings, exhaust system and silencer, lb.	10,080
Engine weight per horsepower, lb.	6.1

As already mentioned, the locomotive has been in ordinary traffic on the London Midland Region, and has demonstrated its ability to handle successfully the trains to which it has been assigned; owing, however, to the exceptionally high power output available, it was found to be impracticable to examine its performance during runs in normal road service, and tests using the London Midland mobile testing units were, therefore, proposed. The results of comprehensive trials carried out with the L.M.R. m.t.u.s. are the subject of the test report bulletin now under review. The object of these extensive trials was to establish the powers developed and fuel consumptions over the widest possible range of working, and were carried out on the L.M. Region between Carlisle and Skipton by the L.M.R. testing personnel in association with the English Electric Company.

### Method of Testing

The test programme was arranged to cover the powers available for traction with two engines and one engine only. When operating with two engines, tests were made at eight different settings of the controller, corresponding to nominal engine speeds of 700, 800, 900, 1,050, 1,200, 1,300, 1,400 and 1,500 r.p.m. The lowest speed of 700 r.p.m. was chosen to show the tractive power at the idling speed. The maximum speed of 1,500 r.p.m. corresponds to the maximum power of the engines.

As far as practicable, each of these conditions was maintained for an entire specific test run. The first 15 to 20 min. of each run was devoted to warming up under conditions approaching those prevailing during the test. The engine speed r.p.m. was then set to the required value using the driver's controller, and the actuator air pressure noted, as a means of accurately maintaining and reproducing the engine r.p.m. At fixed controller position, engine r.p.m., fuel consumption and b.h.p. remain sensibly constant, and all test measurements were made under these conditions.

During each test the mobile testing units were employed to control the road speed in increments of 5 m.p.h. The normal duration of any of these constant speed steps was 5 to 10 min., according to circumstances. Continuous records of speed, drawbar tractive effort and horsepower, etc., together with fuel consumption in increments of 0.2 gal., were made in the dynamometer car throughout each test.

### Electrical and Diesel Data

In addition to the above, the following information was recorded:

Main traction circuit current	By continuous oscillograph recording
No. 1 main generator voltage	
No. 2 main generator voltage	
No. 1 auxiliary generator current	
No. 2 auxiliary generator current	by logged readings
Nos. 1 and 2 auxiliary generator voltages	
Fuel temperatures (both engines)	
Engine room ambient temps.	
No. 1 engine	by continuous electrical recording: 1 impulse per rev.
Fuel rack setting in degrees	
No. 2 engine	
Fuel rack setting in degrees	
Engine r.p.m. No. 1 engine	
Engine r.p.m. No. 2 engine	



The English Electric prototype 3,300-h.p. Deltic locomotive about to leave Lime Street with a London express

istics was obtained by preparing from the test results a family of curves relating drawbar tractive effort to fuel consumption for various speeds in miles per hour. The final drawbar tractive effort and horsepower characteristics are given by graphs 1 and 2 relating to the locomotive with two engines in operation. These illuminating graphs give a complete picture of the capacity of the locomotive when operating under the conditions noted on a level tangent track at speeds from 10 to 80 m.p.h. As an indication of the comprehensive nature of these trials, it will be noted that tests were made at 12 different engine speeds r.p.m. when operating with two engines and at seven when one engine only was working.

### Comparisons With Other Locomotives

In addition to graph 2 showing the drawbar horsepower-speed relation for the Deltic diesel locomotive, a further graph, No. 3, has been prepared, showing for comparison the maximum powers developed by the Deltic and by other locomotives, both diesel-electric and steam, which have been the subject of previously conducted tests. The horsepower characteristics given include the following locomotives in addition to the Deltic design:

1. The Southern Region diesel-electric 2,000-h.p. type 1Co-Co main-line locomotive, Bulletin No. 10.
2. B.R. Class 8 type 4-6-2 steam locomotive No. 71000, Bulletin No. 15.
3. B.R. Class 7 type 4-6-2 steam locomotive No. 70005, Bulletin No. 5.
4. Western Region King Class 4-6-0 type locomotive No. 6001, Institution of Locomotive Engineers Journal No. 235, 1953. Paper by S. O. Ell, "Developments in Locomotive Testing."

In the case of each of the locomotives the curves of horsepowers represent the absolute maximum drawbar horsepowers developed, irrespective of fuel consumptions. The powers shown for the steam locomotives correspond to capacity operation as dictated by the steaming power of boilers. They are the potential powers available at maximum firing rates as given by the tabular statement on page 14. It will be noted that the maximum power of the Deltic locomotive with two engines and the maximum powers of the steam locomotives Classes 7 and 8 occur at substantially equal speeds of about 40 m.p.h. The King class engine reaches its maximum power at the drawbar at about 34 m.p.h., so also does the S.R. diesel-electric locomotive No. 10203. The Deltic, when operating

9.9 lb.; at 70 m.p.h. 12.2 lb. and at 80 m.p.h. 15 lb. per ton.

### Fuel Rates and Traction Efficiencies

The performance of this remarkable locomotive is well shown by the graph Fig. 2 giving the drawbar horsepower available on a level tangent track at speeds up to a maximum of 80 m.p.h., together with the corresponding b.h.p. output of the two diesel engines and the fuel oil consumptions lb. per hr. This information permits of any computations being made to establish the fuel rates per d.b.h.p. hour, as may be required, and the thermal efficiency based on the calorific value of the fuel already given.

Such information, based on the performance of the locomotives with both the diesel engines operating at full power and for locomotive speeds of 50, 60, 70 and 80 m.p.h., is given below, which also includes the computed thermal efficiencies when operating under the conditions above-mentioned.

Speed m.p.h.	Fuel per h.p./hr.	D.b.h.p.	Thermal efficiency per cent
50	0.475	2,575	27.4
60	0.489	2,505	26.61
70	0.508	2,410	25.70
80	0.532	2,300	23.60

### Operating Characteristics

The test report includes a series of graphs giving the performance of the locomotive when working with both the diesel engines running and with one only operating. With both engines working, separate graphs are given for 300-, 400-, 500- and 600-ton passenger trains and for speeds up to 80 m.p.h. These show the available traction d.b.t.e., lb., characteristics in relation to speed for constant power outputs by the two diesel engines, ranging from a total power of 696 to the maximum of 3,250 b.h.p.

Superimposed on these several tractive effort curves, a further set is shown giving the total resistance of a specific train load, tons, on a level tangent track and on various descending and



## LORRY—BUS—COACH

## Municipal Bus Wage Offer

At a meeting on July 31 of the N.J.I.C. for the Road Passenger Transport Industry, representing municipal bus undertakings and their manual workers, the employers made an offer of 5s. per week on the current wage claim. This offer is in line with the recent settlement for London Transport Country area busmen. It was neither accepted nor rejected by the union side, instead the executives of the two unions involved are to be consulted. Negotiations on this claim commenced early in June. Other municipal workers have just had an increase of 7s. 4d. per week.

On the following day a London busmen's delegate conference agreed unanimously not to co-operate "in any way" in the 9 per cent cuts which the London Transport Executive is to make in scheduled road services. The L.T.E. has now agreed to postpone the implementation of the second series of service cuts from October until November 26 in the Central bus section, October 15 on the Country service and January 7 in the trolleybus section. The busmen rejected a resolution calling on crews to refuse to work private hire, or take standing passengers, and to refuse to leave early from a terminal point (i.e. to cover a gap in the service) or to turn buses.

Only nine of the 130 delegates voted for this amendment. Mr. A. Townsend, national secretary of the road passenger workers group of the T. and G.W.U., explained that no instructions or guidance would be given to members—"it will be left to the good sense of the individual staff." A total of 530 Central buses, 60 trolleybuses and 28 Country buses is to be withdrawn following the completion of this economy drive.

## Vehicle Hired Out or Sold?

EVIDENCE about an A-licensed vehicle which was stated to have been hired daily to another operator was heard in the South Wales traffic court when James Gowman and Sons, Carmarthen, elected to attend a public inquiry to show cause why a vehicle of 2½ tons unladen weight should not be removed from its licence. Mr. S. J. Camfield, senior traffic examiner of the Ministry of Transport, stated that in May, 1957, a prohibition was placed on the vehicle which was being used by B. T. Jones and Sons of Carmarthen. The Ministry wrote for Gowmans' observations, pointing out the apparent breach of the regulations and the obligations of a licensee under the Act. Gowman denied that the vehicle was being operated by B. T. Jones and Sons and claimed that it was being employed on day work for them. Subsequently Mr. Camfield again stopped the vehicle and in April he interviewed the Gowman brothers who admitted that the vehicle was on hire to B. T. Jones for £10 per week. Jones had now purchased the vehicle outright and had applied to have it placed on his C-licence.

Mr. James Gowman, one of two partners in the firm, said in evidence that Mr. Graham Jones had approached him for the hire of the vehicle and a sum of £10 per week had been agreed between

them. This subsequently proved an uneconomic figure and Jones then gave him a lump sum of £110. "It was not until Mr. Camfield visited me that I knew anything wrong had been done," said Mr. Gowman.

Announcing that the vehicle would be removed from the licence, the licensing authority said his duty was abundantly clear on two grounds. The vehicle had ceased to be used within its declared normal user and had been disposed of by the licensee.

## Tees-side Bus Needs Disputed

TWO Tees-side public transport undertakings have failed to reach a mutual understanding over increasing stage service requirements in the South Bank district, it was reported at a resumed hearing by the Northern area Traffic Commissioners



Leyland Tiger Cub with dual-purpose Harrington body of Silver Star Motor Services, Limited, picking up in Salisbury on its route to Winterbourne. The "peaked cap" treatment of the front dome makes a refreshing departure in an age of standardised bus bodywork

in Middlesbrough on July 28. Meantime one of them, United Automobile Services, Limited, was said to be feeling the growing competition of the British Railways half-hourly diesel services to Saltburn through the area, and was not recovering a 3 to 4 per cent traffic drop experienced after last year's strike. After a lengthy hearing it was decided that an application by the other local operators, the Tees-side Railless Traction Board, for a new service between Middlesbrough and Eston would be refused.

But the commissioners said that housing development in the district might justify additional services within 12 months, and if the Board meanwhile made proposals to divert its existing route T it might be considered favourably. United would be allowed to divert one bus per

hour from one of its existing routes in the area. The Tees-side Board may re-submit an application to re-route a service through T. esville. At a meeting of Eston Urban Council on July 31, one of the joint operating authorities of the Board, the Clerk (Mr. T. M. Baker) said that although the commissioners had granted applications by United in the same area, they did not mean that it had become a territory in which United should have exclusive operation.

## Shadow Fuel Scheme in Bus Strikes

MEMBERS outside the immediate vicinity of the London and Home Counties area who would like, if possible, to make arrangements to ensure under all conditions continuity in the supplies of fuel—and that means during strikes by employees of major bus undertakings—are being invited to get in touch with the head office of the P.V.O.A. It will be recalled that during the recent London bus strike, private coach operators in the Home Counties who ran emergency services and private hire works journeys were refused oil supplies at the instigation of the T. and G.W.U. Within two days all fuel supplies to members, reports the P.V.O.A. bulletin, were assured

Indian coach venture in April last year with a second-hand single-deck A.E.C. Regal coach; this is now making its fourth and last trip. A second coach is being used but A.E.C. is supplying a Mercury goods chassis, to provide high ground clearance, fitted with the 150-b.h.p. engine. The Harrington body will be fully air-conditioned, with a kitchen, refrigerator, radio, boiled water, and the vehicle will tow a luggage trailer.

## Reversing Warning on One-Man Buses

FOR greater road safety, London Transport is to fit 8-in. long indicators, on which the word "Reversing" will light up in red, on the rear of its Country area one-man operated 30-ft. long A.E.C. Regal RF-type single-deck buses which are now extensively employed on rural routes. They are already fitted with a white reversing spotlight.

## Beach Bus Service at Southport

SOUTHPORT may lose the beach bus service which has been an attraction at the resort for some years. The publicity and attractions committee reports that no valid tenders have been received for the right to operate the service next summer. The Corporation Bedford four-wheel drive buses which now maintain the service are to be withdrawn as obsolete.

## Fingerprint of Thief under Gummed Strip

SMART work by a factory security officer last week secured the conviction of a London lorry driver for theft of goods in his charge. He had collected cartons of shirts which, though outwardly intact on arrival at destination, were found to be several missing. The manufacturer's security officer noticed that the cartons had been sealed at the base with a different kind of gummed strip. He removed a piece and sent it to Scotland Yard. On the underside was found the accused's fingerprint.

## Municipal Results

South Shields.—Earned a trading profit of £27,755 and a net surplus of £4,208 during the year ended March 31. Derby.—There was a profit of £21,786 (£12,342). Mileage run declined by 1.8 per cent, passengers were 6 per cent fewer, but revenue was up £45,232, due to higher fares. Trolleybuses made a profit of £29,181; buses showed a deficit of £7,395.

## Bus and Coach Developments

W. H. Hailstone, Churchstoke, applies to divert his route thence to Shrewsbury to include Horsebridge and Asterley. A. E. Bengry, Leominster, seeks the Leominster—Hereford service of G. H. Yeomans.

Fait and Park, Stromness, apply for the licences of D. Wishart and Son, also of Stromness.

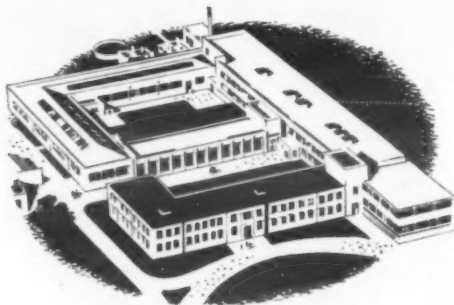
Southdown Motor Services, Limited, proposes to advance its winter timetable from the beginning of November to mid-September.

The business of F. W. A. and M. Smith and E. Ellis, known as W. A. Smith, Market Street Garage, Tottington, is to be transferred to Smiths Coaches (Tottington), Limited.

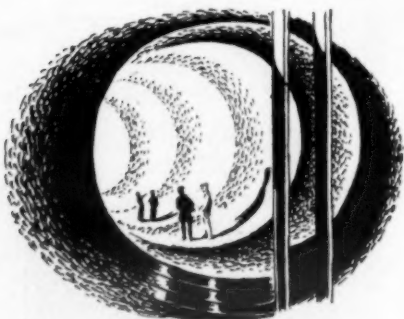
Buckmaster Garages, Limited, Leighton Buzzard, proposes to use a double-decker (XTC 684) on its works express service from Newton Longville to Vauxhall Works, Luton, subject to a conductor being carried. This is the experimental Leyland PDRt 61-seat double-decker with a rear engine, recently operated by Lowland Motorways, Limited.

Application is made for a pickup at The Bull, Larkfield, on the East Kent Ramsgate—London service. Prebooked passengers for the Maidstone and District tour of Eire may be picked up or set down at Larkfield for travel to and from points in the East Kent area, the fares to Larkfield being the fares to Maidstone and payable to East Kent Road Car Co., Limited.

On taking over the Birmingham—New Oscott service from Birmingham and Midland Motor Omnibus Co., Limited, Birmingham Corporation has tabled a revision of fares, with a 7d. minimum outward from Martineau Street, and a shifting of fare stage points and names. On the B.M.M.O. Birmingham—Sutton Coldfield the minimum on outward journeys will be 8d. There are consequential revisions on B.M.M.O. Birmingham—Streety and Birmingham—Walsall services.



At Banbury, metallurgists study continuous casting, corrosion problems and alloy formulation. Chemists investigate the problems of surface conditions, anodising, brightening and electro-plating. Engineers study fatigue and deformation and the techniques and "know how" of forging, rolling and extruding aluminium. Physicists study re-crystallisation of cold-worked aluminium, heat transfer and methods of X-ray inspection.



Investigation, Research, Development. These are the tools which every industry must use to ensure its continued progress and prosperity.

The Aluminium Industry is no exception. Scientific understanding wrested from nature the secret of making aluminium: scientific research is ensuring that the best possible use is made of this light, strong, durable metal.

The modern and well-equipped laboratory at Banbury is only one of four laboratories maintained by the Aluminium Limited Group. All the techniques and specialised skills of modern science and engineering are used in these laboratories to extend the uses of aluminium.

# The heart of the problem

This research and development work done at the Banbury Laboratories ultimately benefits British industry as a whole. These facilities are costly and represent the application of scientific and industrial skill of the very highest kind. The laboratories of the Aluminium Limited Group of Companies are an investment in the future of the aluminium industry.

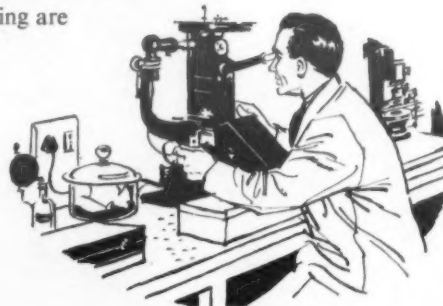
If you would like to take advantage of these facilities why not consult—

## Aluminium Union Limited

(Incorporated in Canada)

THE ADELPHI · JOHN ADAM STREET · LONDON W.C.2 · OFFICES, ASSOCIATED COMPANIES AND AGENTS THROUGHOUT THE WORLD

An Aluminium Limited Company



Other departments apply the findings of the research specialists to the specific problems of design and welding, publish the results of the research programme to our associate companies and help the technical sales staff to solve the day-to-day problems that customers face.



## HUMAN ELEMENT IN RAIL COLLISIONS

### The St. Johns and Dagenham East Collisions

#### CHIEF INSPECTING OFFICER'S REPORTS

IN his reports on the railway collisions at St. Johns, Lewisham, and Dagenham East (briefly reviewed in MODERN TRANSPORT of July 26) Brigadier C. A. Langley, chief inspecting officer of railways, attributes blame for both disasters to the human element. In each case the driver of an oncoming train passed a stop signal at danger and ran into a train standing at a signal on the same line.

The collision at Lewisham occurred on December 4, 1957, near St. Johns Station when the 4.56 p.m. express passenger train from Cannon Street to Ramsgate collided at about 30 m.p.h. with the rear of the 5.18 p.m. electric train from Charing Cross to Hayes. Ninety persons lost their lives. In this case it is stated the accident would have been prevented by automatic train control of the warning type.

The collision at Dagenham East station was on January 30, 1958, and the trains involved were the 6.35 p.m. steam passenger train from Fenchurch Street to Shoeburyness, travelling at about 25 m.p.h. and the 6.20 p.m. train from Fenchurch Street to Thorpe Bay, which was moving slowly forward at the moment of impact. Ten passengers were killed. Although the Fenchurch Street-Southend line is equipped with a.t.c. of the warning type the report states that it could not have prevented this accident because it operates only at the distant signal. The equipment was working correctly, carrying out its two-fold function of indicating to drivers the location of the distant signals and of giving them advance warning of their aspects. "Passed Fireman Barnes responded correctly to the Upney distant signal at caution and



During 1958, 63 miles of the London Midland Region main line will be equipped with a.t.c.; our photograph shows electro-magnet in position and permanent magnet in course of being placed

he stopped his train without difficulty at the home signal. Thereafter he lost himself in the dense fog with visibility reduced to a few yards and ran past the starter without noticing it." Although a train stop or similar apparatus which makes an irrevocable brake application in the event of an over-run would have stopped the train, its adoption is not recommended because the advantages of the system would not justify its cost and complications for the reasons given in the report on the St. Johns collision.

#### St. Johns Disaster

For the St. Johns collision the chief inspecting officer holds Driver W. J. Trew, who was in charge of the Ramsgate train, solely responsible.

He states he is convinced that Driver Trew did not see three signals and did not make a brake application until after his fireman had called out that the last signal was a red. He was not expecting to be stopped at the signal and was no doubt taken by surprise. He was not of the type to react rapidly to an emergency. The rear of the electric train was only 138 yards ahead and this distance would have been covered in less than 10 seconds.

It was difficult to understand that a driver with Trew's experience and knowledge of the route should have made no attempt either to observe these signals or ask his fireman to look out for them. He knew the signals were on the right-hand side of the line and that the view of them from the driver's seat was obstructed at close range by the engine boiler. In the prevailing conditions of poor visibility he should have crossed to the right side of the cab or told his fireman to look out.

#### Automatic Warning Control

Brigadier Langley states that the accident should have been prevented by automatic train control of the warning type. Had warning control been installed on the main line through New Cross a siren would have been sounded in the engine cab on the approach to the signals which Driver Trew passed and he would then no doubt have got his train under control before he reached the signal at red.

Alternatively, had he been in charge of an electric or diesel-electric train with no obstruction in front of the driver's cab he could scarcely have failed to see the powerful colour-lights, although they were on the right of the line.

The British Transport Commission had now planned to install the automatic warning control safeguard on all the main routes in the country. It would not relieve drivers of their responsibility to observe signals but it would help them in conditions of poor visibility.

Multi-aspect colour-light signals were also of great value in such circumstances. These were also being installed in increasing numbers. The multi-aspect signalling on the Southern Region's eastern section main line, brought into use between 1927 and 1929, had contributed in no small measure to the safe and efficient operation of one of the most densely occupied railway lines in the world, on which, until now, no train accident involving passenger fatalities had occurred during the last 30 years. In view, however, of the very dense traffic on the Eastern Section main line, its equipment with a.t.c. would rank high in the next stage of the programme.

#### Train Stops

On a main line, where trains vary so much in weight and in speed, the introduction of a train stop system by itself would result in increasing very

greatly the length of the overlaps beyond stop signals, which would reduce to an unacceptable extent the capacity of many of the very densely operated sections of line. Furthermore it would be extremely costly and it would also necessitate complete resignalling of the lines.

Statistics showed that the provision of train stops at stop signals, in addition to warning control at distant signals, would add little to the safety of travel and that during the 46 years from 1912 to 1957, 31 per cent of the fatalities in train accidents might have been saved by warning control alone, while with both forms of control this figure would have risen only to 38 per cent. The cost of equipping the main lines with warning control would be high but the cost of installing both systems would in no way be commensurate with the advantages obtained.

The British Railways' latest system of warning control with its audible signal in the cab, its visual reminder and its automatic brake operation if the driver failed to respond was, he considered, the best practicable aid to drivers in controlling their trains safely in all weather conditions.

#### Tail Lights and Radar

There were admittedly cases, though not in the present one, when good tail lights might have prevented accidents, and the British Transport Commission was carrying out experiments to improve the present lights. With regard to other suggestions for improving railway safety Brigadier Langley says that the general conclusion is that radar is not applicable at present to railway conditions in spite of its proved success at sea and in the air. One of the difficulties is that radar works only in straight lines. The use of radio in railway operation had also been found unsuitable for controlling the movement of trains. The possibilities arising from the development of electronics were not being neglected by the British Transport Commission and investigations into its application were proceeding.

Fireman C. D. Hoare, who was accompanying Driver Trew is absolved from criticism for failing to observe or remark on the signals which were passed.

#### Equipment at Dagenham

With regard to the Dagenham accident, Brigadier Langley says he is satisfied the signalling was in good order and that the automatic train control equipment both on the engines and on the ground was working correctly.

Passed Fireman R. S. Barnes, who was in charge of the 6.35 p.m. train engine, was a young and relatively inexperienced driver who qualified only six months before the accident. But during his four and a half years' service as a fireman he had travelled constantly over the line.

The report on the Dagenham collision states that full consideration of the evidence leads to the conclusion that Passed Fireman Barnes passed the Upney starter signal at danger. It is believed that Barnes and his fireman were looking for this signal but were uncertain of its position and missed it in the fog. Having remarked that the Fenchurch Street to Southend line was equipped with the warning type of automatic train control, Brigadier Langley says it could not have prevented the accident, as it operated only at the distant signal.

#### Rules Revision

If the 6.35 p.m. train had been held at Upney home signal to await acceptance from Dagenham the circumstances leading to its over-running the starter would not have arisen; but with the line covered by a track circuit and the starter properly repeated, the signalman was under no obligation to do this. It was for consideration that the rules governing train working in fog or falling snow should be revised so as to minimise the chance of similar accidents.

There were no special aids to help a driver in fog at a starting signal and a colour-light at eye level would have given a glow which Barnes could scarcely have missed at close range, states the inspecting officer.

As in the case of the Lewisham accident it had been suggested that a powerful tail light on the rear of the stationary train might have prevented the accident but the fog was so dense that even a colour-light was not visible except at close range. The provision of a specially designed collision coach at each end of the train had also been suggested, but he considers it better to use the available resources on safeguards for the prevention of accidents rather than dissipate them on devices which may contribute relatively less to the safety of the travelling public.

## OIL MIST DETECTOR

### Graviner-B.S.R.A. Equipment Sensitivity

IN a description of the Graviner-B.S.R.A. oil mist detector which appeared in our July 19 issue, a nought was inadvertently dropped from the figure 50 in a paragraph indicating the oil mist density at which an explosion was possible. In addition reference to sensitivity of the apparatus made it appear that a much smaller safety margin was provided than is in fact the case.

The relevant paragraph should have read: The point at which the warning devices will operate is adjustable but is usually set between 1½ and 2 milligrams of oil per litre of crankcase volume—sufficiently far below the minimum concentration of 50 milligrams per litre necessary to produce an explosive mixture to provide engine-room staff with adequate time to take appropriate action.

On August 5 Ferodo, Limited, opens a new Manchester sales branch at 57 Upper Chorlton Road, Manchester, 16. Ferodo House, as the premises will be known, replaces the present depot at 53-55 Fennel Street, which closed on August 1. The new premises will provide exceptionally good parking facilities for customers' vehicles. The district manager is Mr. C. P. Lyall.

# The first

## main line diesel-hydraulic locomotives in service on British Railways.



Photo. by courtesy of British Railways, Western Region.

The first of five built by North British Locomotive Co. Ltd., in Glasgow, is in service on the Western Region. These 2,000 h.p. 117 ton type "4" locomotives are fitted with

WESTINGHOUSE

## BRAKES

The brakes are of the vacuum controlled straight air type, in which the driver's vacuum brake valve controls the train brakes, and, through a proportional valve, the air brakes on the locomotive.

Independent control of the air brakes on the locomotive is provided by a driver's straight air brake valve.

The brakes were designed and made in England by:  
Westinghouse Brake and Signal Co. Ltd., 82 York Way, London, N.1

Associated in India with Saxby & Farmer (India) Private Ltd., Calcutta Associated in Australia with Westinghouse Brake (Australasia) Pty., Ltd., Concord West, N.S.W.  
Associated in South Africa with Westinghouse Brake & Signal Co. S.A. (Pty.) Ltd., Johannesburg  
Agents—Bellamy & Lambie, Johannesburg

## CLASSIFIED ADVERTISEMENTS

### Semi-Display

Semi-display advertisements can be inserted in the classified columns of MODERN TRANSPORT.  
Rate: 40s. per single column inch.

CLASSIFIED ADVERTISEMENTS  
MODERN TRANSPORT, 3-16 WOBURN PLACE, LONDON, W.C.1



The patented thrust washer is a Cheney Worm Drive Clip exclusive. It permits the use of a larger diameter screw, giving a deeper, more positive thread engagement with a never-relaxing grip to withstand greater torque. And yet the Cheney Worm Drive Clip costs no more than a conventional clip.

**CHENEY WORM DRIVE CLIP**  
from **FENTER**

Trade Enquiries to:  
FENTER LTD., 184 ASTON ROAD, BIRMINGHAM, 6



**B.A.A.**  
BATTERY ACID

gives better and longer  
battery service

**F. W. Berk & Co. Ltd.**  
STRATFORD, LONDON, E.15  
Telephone: MARYland 6644



# THE ABERDEEN TRAMWAYS

## End of an 84-Year Era

By MICHAEL H. WALLER, B.Sc., A.M.I.C.E.

WITH the withdrawal on May 3 last of the remaining tramway route in Aberdeen, the replacement programme begun in 1951 was completed. Aberdeen, Scotland's third largest city, with a population of over 180,000, possessed Britain's most northerly municipal tramway system, and its abandonment leaves Glasgow as the only tram-operating authority north of the Border.

The first tramways in Aberdeen, authorised by the Aberdeen District Tramways Act of 1872, were opened on August 31, 1874, from the North Church to Kittybrewster, via Castle Street and St. Nicholas Street, and from Queen's Cross to Castle Street via Union Street, a total of three route-miles. Within a year St. Nicholas Street had become the terminus for the Kittybrewster route, the connection between the two routes being used only on special occasions. Initially seven cars operated these services, the depot being at Queen's Cross; in later years depots were provided at Kittybrewster and Mannofield.

### Horse Tram System

By 1898 the Aberdeen District Tramways Company owned a standard-gauge system operating to Woodside, Mannofield, Bridge of Don, Bridge of

was rebuilt to be largely double track throughout, with girder rails, in view of possible electrification. Steam traction was never seriously considered, but two horse-bus routes were established in 1880, from Mannofield to Myrtle, and from Woodside to Stoneywood. These were not financially successful, and were withdrawn in 1884.

### Transfer to Corporation

Although the company was in a strong financial position, it was felt that the cost of electrifying the system, some 11 track-miles, would be beyond its resources. As the Corporation had already indicated its desire for control, the concern was eventually transferred on August 25, 1898, after protracted negotiations. The terms of the agreement, which were embodied in the Aberdeen Corporation Tramways Act of 1898, included the payment to the company of £103,785—a surprisingly large sum at that time.

Electrification of the system had already been decided on by the Corporation, and work started immediately on the Woodside route, which was reopened on December 23, 1899. The service was operated by eight double-deck cars, reminiscent of the later horse-car types, which were built by

electric cars, and although workshop facilities were provided at Kittybrewster, these were insufficient, and new workshops were erected in 1903 at Dee Village Road, which was also on occasions used as a running shed. To serve the Sea Beach route, a further depot was built in Constitution Street, and four cars, Nos. 21-24, were assembled there in 1902. The number of small depots and the congested workshop space were to cause considerable difficulties in later years, but the original intention was to provide separate depots for each route or group of routes.

The Ferryhill, Duthie Park, and Torry routes were opened in 1903, bringing the system to just over 12 route-miles, mostly double track. It is interesting to note that the Torry route, which served the south-east suburbs, remained entirely disconnected from the system as a whole from when it was opened on October 10, 1903, until July, 1905, when a new tramway was opened in Bridge Street and Guild Street. Again, a separate depot was built for this route at Market Street. Unlike most other municipal systems which expanded rapidly until 1914, Aberdeen was to make no further extensions for 20 years. The total cost of the conversion was £156,000, excluding the new construction.

### Steady Development

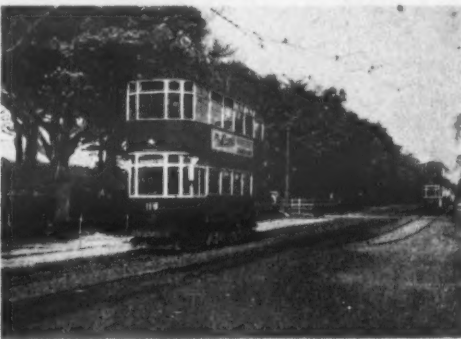
Sunday services were first operated in 1902, and in 1903 1d. fares were introduced on Union Street; later they were extended to Woodside, and eventually to the whole system in 1911. The tram fleet continued to rise steadily; Nos. 33-56 were delivered by the B.E.C. in 1903, being the last of its contract for 48 trams. The stock was barely sufficient to work all services, and in 1904 13 six-window horse

top-covered bodies by Milnes-Voss, the first of this type to be bought, and numbered 68-71. The remaining ex-horse trams were withdrawn in 1922-23, but several were retained as works cars; No. 60 existed intact until recently as No. 24, whilst another was converted back to horse traction, and it was this latter vehicle which was used in the closing ceremony on May 3, 1958. None of these cars was ever top-covered, but No. 61 was rebuilt in 1913 with extended platforms and reversed stairs for service on Sea Beach route.

### Experiments

Interest had been shown earlier in the stud-contact system, and an experimental section was built in 1905 at the Sea Beach terminus, where considerable wear of the trolley wire had been occurring. As these experiments were not a success, the scheme was abandoned, and the equipment removed. Another experiment, this time on the Woodside route, was the introduction of a p.a.y.e. system on April 28, 1913. This was soon extended to the Sea Beach, Torry and Mannofield routes, but was withdrawn on March 15, 1915, as a result of numerous complaints.

The first car to be provided with a top cover was converted by Shinnie, and was in service on the Mannofield route by April, 1904. The second car of this type, No. 16, was fitted with a completely enclosed top deck to the design of Mr. White, manager of Grimsby Corporation Tramways. A similar cover to the first was then put on No. 20. By December, 1909, 44 cars had been so converted, but as yet there was no form of standardisation. Between 1912 and 1914, 12 further cars were acquired, Nos. 72-77 being built by J. T. Clark, of Aberdeen, and Nos. 78-83 by Brush to a similar



The evolution of Aberdeen four-wheeled cars: Horsecar in 1880 at Mannofield; one of the eight original electric cars built by Brush in 1899; original Brush car with top cover, 1912; and, right, all-enclosed cars at Hazlehead in 1955

Dee, Queen's Cross via Rosemount or via Union Street, and Bay View (known as Rubislaw in later years). Thirty cars, built by Shinnie of Aberdeen and the Glasgow Tramways and Omnibus Company, comprised the company's rolling stock. Generally speaking, the cars were worked on one particular route only, and were painted in distinctive colours (e.g. white, yellow and blue for Rosemount, Queen's Cross and Bay View respectively), with the name of the route thereon. Similarly, cars were numbered in accordance with each route, and not as a general fleet.

Originally the track was mostly single and laid with box-type rails, but, during the later years of the company's control almost the entire system

Brush, with Westinghouse equipment. On July 4, 1901, a new route from Castle Street to Sea Beach was opened, and by 1902 the whole system had been electrified. During the same period 24 double-deck open-top cars were delivered from Brush.

Until late in 1902 the Corporation had continued the practice of numbering the cars according to their route, but with the growth of the fleet, this led to confusion, and had obvious drawbacks from the operational aspect. Consequently the whole fleet was numbered consecutively, although the route names were retained, and indeed some of the older cars preserved these until recent years.

The company's depots at Queen's Cross, Mannofield and Kittybrewster were converted for housing

cars, dating back from 1897, were rebuilt to electric standards, mounted on Brill B4E trucks, and numbered 57-69.

These trams have always been something of a mystery. From recent research it now appears reasonably certain that all 13 trams were built by Shinnie of Aberdeen, and that at least nine of them were converted in Aberdeen, and at least two in Glasgow. Nine of these cars had extended canopies, with 52 seats; the remaining four seated 48 and had no canopies. These conversions were not completely successful; in fact Nos. 68 and 69 were scrapped as early as 1908, followed in 1911 by two further cars. The electrical equipment and trucks off these cars were fitted in 1911 with new

design. All were mounted on Brill 21E trucks, and fitted originally with Westinghouse 90 controllers and two 30-h.p. motors.

### King Street Acquisition

Prior to the 1914-18 war trams were shedded at Queen's Cross, Mannofield, Kittybrewster, Constitution Street and Market Street, but as these were mostly small depots, a shortage of space existed, and the working of scattered units was uneconomic. With a view to providing one large central depot and workshop, the old Militia Barracks in King Street was purchased in 1913 for £800.

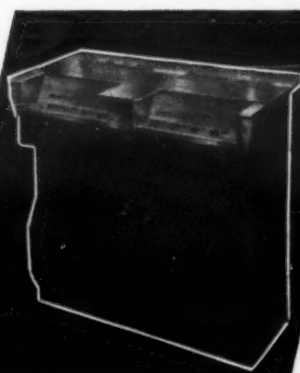
(To be continued)

## FARE COLLECTION

### SYSTEMS

Speed, ease, accuracy — these are the qualities everywhere associated with BELL PUNCH machines, four of which are shown here.

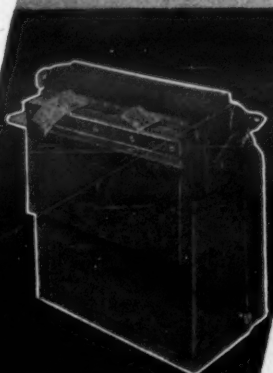
## TOP SPEED TICKET ISSUE with BELL PUNCH



### THE S.P.

For railways

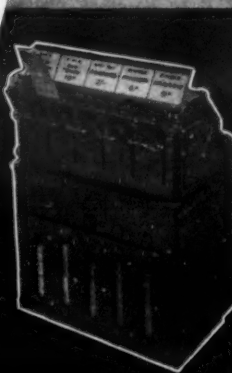
Self printing for speed and accuracy, issuing 2 tickets per second.



### THE SOLOMATIC

For one-man bus operation

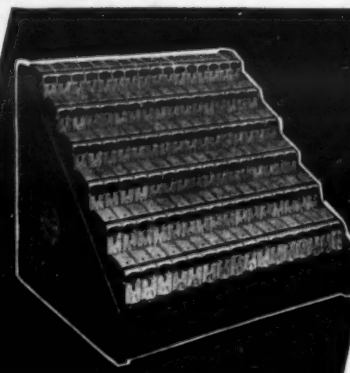
Pre-printed coloured tickets from driver to passenger in a second — automatic overprint of stage, date, etc.



### THE ULTIMATIC

For railways

Speedy issue of pre-printed coloured tickets with automatic dating.



### THE BELLMATIC

For railways

Handy container units for clean, compact ticket storage.



If you would like full information about these or about the many other products in the BELL PUNCH range, let us put you in touch with the BELL PUNCH distributor in your part of the world. He will gladly advise you on the BELL PUNCH method best suited to your needs.



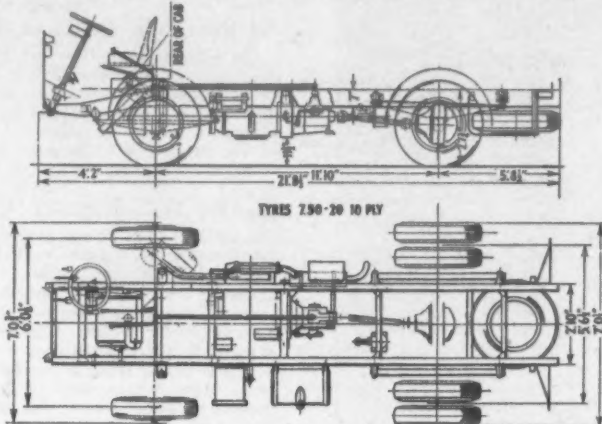
## COMMERCIAL VEHICLE TEST

Albion Claymore Underfloor-Engined 5-ton Lorry\*

### BLUEPRINT FOR THE IDEAL DISTRIBUTION VEHICLE

WE believe that anyone in the industry setting out to design the ideal urban distribution vehicle for medium-weight loads would start off with most of the features incorporated in the Albion Claymore set down as primary requirements. These features, not necessarily in order of importance, can be summarised as easy access of the cab from either side, maximum loading space with good manoeuvrability and ease of control in congested streets, good accessibility for daily maintenance checks, high reliability and good performance and economy, particularly in the lower gears.

By virtue of the underfloor positioning of the engine, the Claymore chassis frame has been dropped at the front end forward of the front axle to provide a base for an exceptionally low-mounted cab, which has been given a completely unobstructed floor and amply proportioned seating for three. The crew can enter or leave the cab easily from either side. Engine components requiring frequent attention have been arranged at the top and sides of the unit where they can be reached easily and removal of the complete engine for major attention is a quick and simple operation. The projection of the cab forwards provides a generous legal body length within a moderate overall length and the short wheelbase makes for a small turning circle and easy handling



Drawings of the Claymore CL3N 5-tonner showing principal dimensions

higher rating have been incorporated. Moreover, by making greater use of proprietary units, gearbox and front and rear axles, for example, the price of the new range is extremely competitive and this advantage is extended to the optional cab, which is now a Motor Panels pressed-steel unit in place of the composite cab previously offered.

The smaller of the two Albion four-cylinder direct-injection diesel engines, redesignated EN250HI in its uprated form for the new Claymore,

now develops 72 b.h.p. at 2,200 r.p.m. and 190 lb./ft. torque at 1,300 r.p.m. from bore and stroke dimension of 4.1 by 4.75 in. and a swept volume of 251 cu. in. (4.11 litres). No-load engine speed is controlled at 2,500 r.p.m. by a pneumatic governor on the Simms fuel-injection pump, giving a high light-load cruising speed. The engine employs Leyland-type combustion chambers and

multi-hole injectors and a number of other engine components are interchangeable with those of the Leyland O350 engine, making for simpler servicing at the joint Leyland-Albion depots. Salient engine features include renewable slip-fit cylinder liners, renewable exhaust valve-seat inserts, nitrided crankshaft with strip main and big-end bearings, large-capacity full-flow oil filter, the Albion automatic induction-manifold valve to provide vacuum for the Hydrovac brake servo and positive gear

#### TEST RESULTS AT A GLANCE

**Vehicle Details**  
MAKER: Albion Motors, Limited, Scotstoun, Glasgow.  
TYPE: CL3N Claymore 5-ton forward-control lorry.  
ENGINE: Albion EN250 direct-injection four-cylinder horizontal diesel engine; bore 4.1 in. (104 mm.), stroke 4.75 in. (120.7 mm.), capacity 251 cu. in. (4.11 litres); 72 b.h.p. at 2,200 r.p.m., 190 lb./ft. at 1,300 r.p.m.  
TRANSMISSION: Clutch, hydraulically operated Borg and Beck single dryplate 12 in. (30 cm.) dia., frictional area 126 sq. in. (813 sq. cm.); gearbox, David Brown Type 440 four-speed constant mesh (ex first and reverse), ratios 6.33, 3.17, 1.747 and 1 to 1; forward, 7.6 to 1 reverse; driveshaft open tubular Hardy Spicer 1410-series with needle roller bearing universal; rear axle, spiral bevel gear with fully floating half shafts, ratio 5.85 to 1 standard, 7.2 to 1 optional.  
BRAKES: Lockheed hydraulic two leading shoe with Clayton Dewandre Hydrovac vacuum servo, total lining area 360 sq. in. (2,323 sq. cm.).  
TYRES: 7.50-20 10-ply, twin rear.  
WHEELBASE: 11 ft. 10 in. (3.61 m.); longer and shorter alternatives available.  
WEIGHT: Chassis only in licensing order about 2 tons 3½ cwt. (2,210 kg.); complete alloy platform lorry as tested in kerb trim 2 tons 19½ cwt. (3,070 kg.).

**Test Results**  
ROUTE: Glasgow—Campsie and Fintry Hills—Stirling—Glasgow.  
CONDITIONS: Cloudy and rather cold.  
RUNNING WEIGHT: 8 tons 9½ cwt. (8,166.5 kg.) plus crew of two.  
PAYLOAD: 5 tons 14 cwt. (5,156.4 kg.).  
FUEL CONSUMPTION: Over 20-mile out and back route continuous running 20.6 m.p.g. (7.28 km./litre) at 28.6 m.p.h. (45.6 k.p.h.) average speed. Outward leg 22.2 m.p.g. at 30 m.p.h.  
GROSS TON/M.P.G.: 168.5 (60.6 tonnes/km./litre).  
PAYLOAD TON/M.P.G.: 104.6.  
MAXIMUM GRADIENT CLIMBED: 1 in 5 (20 per cent).  
TURNING CIRCLE: 46 ft. (14 m.) wheeltrack.  
ADJUSTMENTS DURING TEST: None.  
ACCELERATION: Averages of four runs, two in each direction, through gears:  
0-20 m.p.h. 12.5 sec.  
0-30 m.p.h. 27.9 sec.  
in direct drive:  
10-20 m.p.h. 19.3 sec.  
10-30 m.p.h. 42 sec.  
BRAKING: Average of several emergency stops from 30 m.p.h. on dry level tarmac 48 ft., equivalent to 20.2 ft. per sec. per sec. or 0.63 g. average retardation; Tapley meter 73 per cent. Handbrake only from about 30 m.p.h. 36-37 per cent.  
ESTIMATED TOP SPEED: 50 m.p.h. (80 k.p.h.).  
OVERALL FUEL CONSUMPTION: For 93 miles of hard driving over mainly hilly route, including numerous stops in hill-climbing, braking and acceleration tests, 16.43 m.p.g. (580 km. per 100 litres).

in congested areas. The reputation that the products of Albion Motors, Limited, have earned over the years for reliability, durability and economical operation is a guarantee of the performance of the Claymore in these respects.

#### Many Users

Since the introduction of the 3-4 ton Claymore about four years ago, the vehicle has found many users among such carriers as coal and potato merchants and biscuit manufacturers and the Scottish Co-operative societies have put many scores into service. Whether an increasing demand for midships underfloor mounting of the engine in medium-

drive for all auxiliaries except the dynamo, which is belt-driven.

Power is transmitted through a 12-in. Borg and Beck single dryplate clutch, hydraulically operated by means of a long slave cylinder that automatically compensates for wear throughout the life of the linings, a David Brown Type 440 constant-mesh four-speed gearbox, a short Hardy Spicer-equipped tubular propeller shaft and a spiral bevel rear axle with fully floating half shafts. Alternative axle ratios of 5.85 or 7.2 to 1 are available. The standard specification includes Lockheed two-leading-shoe brakes providing a total of 360 sq. in. of lining area, Marles cam-and-double-roller steering, a



In this picture the test vehicle fitted with prototype pressed-steel cab and 16-ft. Homalloy light-alloy platform and headboard is carrying Tapley brake and gradient meters, the chalk-firing magazine for measuring stopping distance (on back of front wing) and fuel consumption test tank

and high-capacity goods vehicles, which has been filled in the past by the Sentinel, is presaged remains to be seen. Certainly, a few Continental manufacturers have adopted the layout as standard in some of their ranges, even offering underfloor-engined tipping vehicles in which the vulnerability of the engine to dirt and damage in off-road work would seem to outweigh any advantages, but our view is that this has been done to gain the production advantages accruing to a standard layout for both goods and passenger chassis rather than in response to an operator demand.

However that may be, there has certainly been a demand in this country for an underfloor-engined lorry with greater capacity than the original Claymore and to meet this demand, Albion Motors, Limited, recently announced a new Claymore range with a payload capacity of up to 5 tons, as we recorded in our July 5 issue. The same basic layout of a midships underfloor diesel engine and full-forward control three-man cab has been retained, but the engine has been redesigned to give greater power and new running units in keeping with the

15-gal. fuel tank, 12-volt electrical equipment and India tyres.

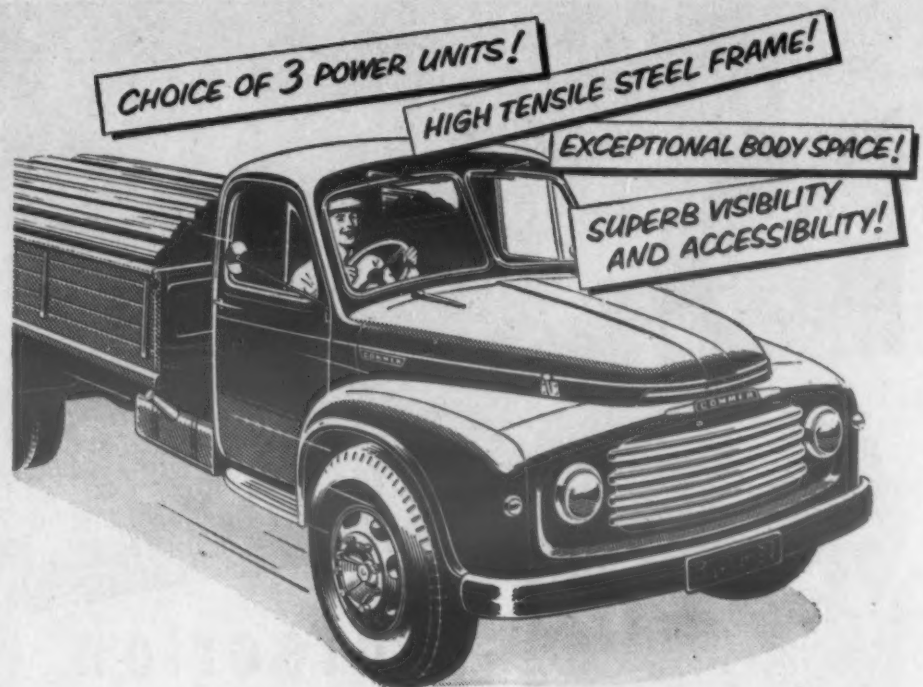
Standard tyre sizes are 7.00-20 10-ply for the 4-ton chassis which is available with 10-ft. or 11 ft. 10 in. wheelbase and is designed for a gross weight of 7 tons, and 7.50-20 10-ply for the 5-tonner which has a recommended gross of 8½ tons and is offered with a third wheelbase length of 12 ft. 10 in. as well as in similar lengths to the 4-tonner. The long-wheelbase version CL3L will be of particular interest to carriers of light bulky loads, for it will accommodate an 18-ft. long body yet has a turning circle of only about 50 ft. The 10-ft. wheelbase will take a 13 ft. 6 in. body and will turn in about 40 ft. while the intermediate wheelbase chassis has a 46-ft. turning circle and will carry a 16 ft. 9 in. body. Despite the underfloor positioning of the engine, the frame height laden is only 2 ft. 7½ in. and clearance under the engine is 11½ in.

#### Spacious and Quiet Cab

Undoubtedly, one of the most attractive features of the Claymore from the driver's point of view is the ease of getting in and out of or across the

(Continued on page 12)

\* No. 450 in the MODERN TRANSPORT series of road tests.



IT'S HERE—THE

## COMMER Superpoise 6 TON TRUCK

The latest and greatest addition to the quality-built 'Superpoise' range, this 6 tonner—based on a well-proved design—stands supreme in its class. Engineered from first-class materials, robustly built and easy to maintain, it will give long periods of economical and trouble-free service.

\* Choice of 3 great power units: 91 b.h.p. petrol with optional chrome bores; 83 b.h.p. 'P6' diesel; 104 b.h.p. 'R6' diesel. \* Deep-section chassis frame of high-tensile steel, and heavy duty rear suspension. \* Exceptional bodyspace—standard factory-built dropsider is 186 in. long. \* Superb visibility from low floor all-steel 3 seater cab equipped with every aid to driver comfort. \* Outstanding engine accessibility simplifies routine maintenance. \* Two-speed rear axle or synchromesh gearbox—with or without overdrive—available at extra cost.

A ROOTES PRODUCT — BUILT STRONGER TO LAST LONGER!

COMMER CARS LTD. LUTON EXPORT DIVISION: ROOTES LTD. DEVONSHIRE HOUSE PICCADILLY LONDON W.1



## Giant economy from Dunlop durability

Keep down running costs by choosing your giant tyres from the Dunlop range. There are tyres to meet every type of service condition—each one individually built to give you mileage, safety and dependability.



#### DUNLOP HIGHWAY

For goods-carrying vehicles on smooth, hard surfaces of city streets and main roads. This is the tyre for long trouble-free mileage.

# DUNLOP

BUILT BETTER TO LAST LONGER!



## NEWS FROM ALL QUARTERS

## Eastern Region Stations Closing

On and from September 15, Swinton Central and also North Drove, Abbots Ripton and Great Ponton stations in the Eastern Region will be closed to passenger traffic.

## Trips on Soar Navigation

Following its successes at Liverpool and Wigan with passenger-carrying boats, British Waterways has decided to make another venture in this direction—this time at Nottingham. On August 2 a 62-ft. long motor cruiser formerly used for carrying freight carried passengers on the River Soar and similar trips will be continuing until the end of September. The cruiser *Water Culew* can carry 54 passengers under cover.

## A Tram Runs Again in Bradford

To mark the Bradford City Transport diamond jubilee a tram ran again in Bradford last Saturday during open-day at Thornbury depot. Trams have not run in the city since May, 1950, when the last route (Odsal) was converted to bus operation. The tram, No. 104, ran with passengers to and fro on 100 yd. of track still in position between Thornbury workshops and Leeds Road, drawing its current from overhead trolleybus wires.

## Thefts of and from Vehicles in London

Thefts from unattended motor vehicles in the streets of London continue to rise alarmingly, says Scotland Yard. Between 1952 and 1957 they rose from 6,227 to 11,248; for the first five months of this year the figure is already 6,275. Thefts of motor vehicles over the same period have risen even higher for in 1952 they totalled 2,226, in 1957 5,953 and for January—May this year the figure is already 2,619.

## Nottingham Traffic Black Spot

An £81,000 scheme to reduce traffic delays at Canning Circus, one of Nottingham's worst traffic congestion points, has been approved by Nottingham City Council. The flow of traffic will be controlled by a new gyratory system, which has been designed as a result of tests carried out by the Ministry of Transport. The scheme will involve the widening of Derby Road, the construction of roads linking Derby Road, Ilkeston Road, and Alfreton Road, and the stopping-up of existing streets. Work is expected to start in the current financial year.

## Duplicating Bath Bridge in Bristol

The Minister of Transport has made a grant of £216,500 towards the cost (nearly £290,000) of building a new bridge over the River Avon at Bristol and improving adjacent roads. These works will enable a system of one-way traffic working to be introduced using the new bridge and the existing Bath Bridge near Temple Meads Station. The new bridge is to be erected some 40 yd. down river to the south-west and will be of pre-stressed concrete construction. Traffic will circulate in a clockwise direction and the system will simplify the traffic flow to and from the Cattle Market Road, Clarence Road and York Road junctions.

## Self-Help Barrows at Coast Stations

Self-help luggage barrows to enable passengers to cope with their luggage themselves have been introduced at three Eastern Region East Coast resort stations, Clacton, Wroxham and Yarmouth South Town.

## National Safety Congress

The National Safety Congress this year will be held on October 7-9 in the Spa Royal Hall at Bridlington. This is in response to the many requests which have been made that it occasionally be held in the North of England. Included will be a road safety "Parliament," with leading experts to answer questions.

## Southend Lines Increased Holiday Traffic

On August Bank Holiday this year the London, Tilbury and Southend line of the Eastern Region carried 52,000 passengers to Southend stations, an increase of 6,000 on 1957. The electrified Liverpool Street—Southend Victoria line carried 28,000 passengers to the same area, also an increase of 6,000 on last year.

## Another Toronto Subway Line

Toronto City Council last month approved the construction of a 10-mile east-west subway line. The total cost of about \$180 million would be shared as to 55 per cent by the Toronto Metropolitan Council and 45 per cent by the Toronto Transit Commission. If the approval of the Ontario Municipal Board is secured work could commence late this year. In MODERN TRANSPORT of April 3, 1954, there was a map of Toronto showing the present subway, which was then under construction, and possible east-west subway routes then expected to be tramcar-operated.

## Birmingham Road Improvements

Last week Birmingham Corporation converted the east side of the Bull Ring south of Moor Street into a dual carriageway. Between the two lanes is the entrance to the future underpass in connection with the Inner Ring Road. The Corporation now hopes to obtain Treasury authority to go ahead with underpasses at Six Ways, Aston, and at the junction of Birchfield Road, Aston Lane and Wellington Road, Perry Barr. Both these crossings are on the main road to Walsall and carry a very heavy traffic of buses and other commercial vehicles.

## Grangemouth Refinery Open Days

B.P.'s Grangemouth Refinery is to be opened to the public during Scottish Week from September 1 to 6, during which many of Scotland's industries will be on show. Transport will be provided from both Edinburgh and Glasgow to the refinery on two days during the week. Visitors will be shown the various units at the refinery as well as some of the new units which are now being erected. When these are completed next year Grangemouth Refinery will be capable of an annual throughput of 3,200,000 tons compared with the present 2,200,000 tons. A number of new units are also being erected for the various petroleum chemical companies whose plants surround the refinery.



Dowty Hydraulic Buffers provide benefits of greater freight and wagon protection which effect new economies in railway freight transportation.

**DOWTY**  
*hydraulic*  
**BUFFERS**



DOWTY HYDRAULIC UNITS LTD · ASHCURCH · GLOS

**Precision**  
FIRST AND LAST



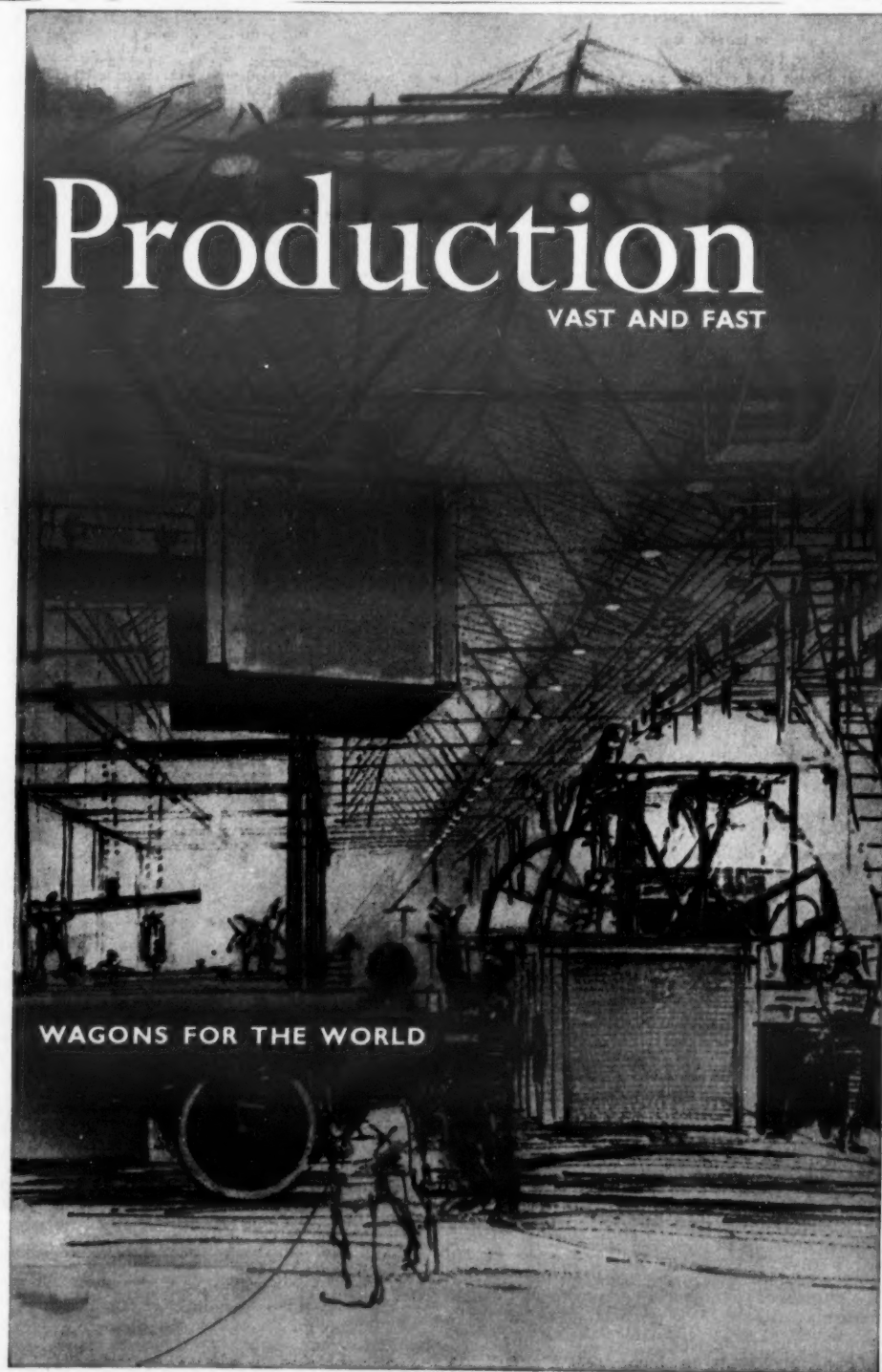
**Pressed Steel**

In the last ten years, Pressed Steel have produced enough railway wagons to make a train 300 miles long. Wagons of all kinds and all gauges for home and overseas. But sheer capacity—the ability to meet big orders and meet them quickly—is only half the story. The other half is just as important, even though it cannot be expressed in statistics—the finish, the painstaking attention to detail, the skill and experience of the men you see here.

**PRESSED STEEL COMPANY LIMITED**

Railway Division: Paisley, Scotland. Head Office: Cowley, Oxford. London Office: 169 Regent Street, W.1.  
Manufacturers also of Motor Car Bodies, Prestcold Refrigeration Equipment and Pressings of all kinds.

**Production**  
VAST AND FAST





## COMMERCIAL AVIATION

### K.L.M. Uses Computer

#### FIRM ORDER FOR DH121

ALL the 22,000 flight plans for the 140 different routes operated on the Continent by K.L.M. (Royal Dutch Airlines) are now pre-calculated by an electronic computer. By using the computer, navigating staff of the airline have produced 156 different flight plans for each route, covering every possible variation in weather conditions. Even the times of passing prominent landmarks and radio beacons are indicated on each plan. Pre-flight calculations by the captains are now confined to selecting the plan appropriate to the prevailing weather situation; reading off the duration of the flight and the fuel required. Ten hours were required to produce the necessary 22,000 flight plans by the I.B.M. Computer. Several months would have been needed to undertake this work by hand. As the electronic brain takes only four minutes to compute a flight plan, amendments made necessary by alteration to radio beacons, routes, engine performances, can be made from day to day.

#### Britannia 312s on South African Route

On July 27 Bristol Britannia 312s took over operation of B.O.A.C. services on the South and Central African routes in place of the Britannia 102 aircraft which have been flying on these routes since February, 1957. Britannia 312 services operate four times a week in each direction between London and Johannesburg, three of the services calling at Salisbury, Southern Rhodesia. On the London—Rome—Khartoum—Nairobi—Salisbury—Johannesburg route the 312's total journey time will be 23 hr. 15 min. The time from London to Salisbury will be 20 hr. 20 min. Until Khartoum airport becomes available the services call instead at Kano and take about two hours more.

#### Swissair in First Half of 1958

Swissair traffic results for the first six months of 1958 showed a 35 per cent increase in offered capacity over the same period a year previously. Tonne-kilometres offered totalled 97,400,755 compared with 72,414,187 and revenue tonne-kilometres performed rose by 25 per cent, from 45,058,060 to 56,111,256; of this, passengers accounted for 34,922,964 (22 per cent up on 1957), air freight for 9,216,664 (36 per cent up) and mail for 3,036,451 (31 per cent up). Distance flown rose to 15,900,655 from (12,964,825) km. the first half of 1957. The average load factor on the scheduled services was 57.6 per cent, against 62.2 per cent a year earlier.

#### B.O.A.C. Rights at Barcelona

Passengers travelling by British Overseas Airways Corporation in either direction between London and West Africa may now break their journey at Barcelona under an agreement between the British and Spanish Governments. This agreement grants stop-over rights to B.O.A.C. passengers flying between London and West Africa, in both directions, for the duration of their tickets. The agreement also enables B.O.A.C. to pick up passengers at Barcelona on flights to West Africa and to take passengers from West Africa to Barcelona. It does not, however, allow passengers to travel solely between London and Barcelona or Barcelona and London.

#### De Havilland Caribou Flies

The twin-engined de Havilland Caribou made its first full flight on July 30 following short hops the day before. The Caribou is designed by the Canadian company of the de Havilland Enterprise and is being tested from the runway of its factory at Downsview, Toronto. Deliveries of the aircraft will start in 1959 to the Canadian Government which placed an initial order on behalf of the United States Army. The Caribou is a specialised type of utility transport aircraft, not confined to runway airports but able to use short landing strips, and having a rugged structure for freight or troop transport, with a rear loading ramp for vehicles. It can carry 28 troops in full battle order or up to 2½ tons of freight. It can clear a 50-ft. obstacle less than 850 ft. from the start of roll and when landing over a similar obstacle will be stationary in 1,000 ft. It is powered by Pratt and Whitney R-2000 engines which each develop 1,450 b.h.p.

#### B.E.A. Order for DH121 Approved

The Minister of Transport and Civil Aviation announced in the House of Commons last week that the Government had now given approval for British European Airways to conclude a contract with the Aircraft Manufacturing Co., Limited (Airoco), for 24 DH121 aircraft. These would cost about £29 million and would be delivered between 1964 and 1966. The DH121 is the short-haul and medium-haul jet air liner which B.E.A. requires to follow and to complement the Comet 4B air liners of which a fleet of six is being built for introduction in 1960. The DH121 will have a maximum cruising speed of more than 600 m.p.h. It is required to carry up to 100 passengers on stage lengths of about 1,000 miles, and must be able to operate from airport runways only 6,000 ft. in length. From longer runways it will operate considerably longer stages. The aircraft will be powered by three Rolls-Royce RB. 141 engines, which will be mounted at the rear end of the fuselage.

#### Ceylon Airports

Ratmalana Airport was opened to air traffic again on August 1. All airlines now use the airport except B.O.A.C. and Qantas, which are continuing to use Katunayake. Qantas has chosen to remain at Katunayake as it is in partnership with B.O.A.C. The main terminal building at Katunayake, however, is not ready and will not be ready for another month as some of the equipment ordered has still not been unloaded. A request by the Ceylon Ministry of Finance for a loan of \$5 million from the United States Operations Mission is at present being considered. If this is granted, Ceylon will receive about Rs.24 million for the further development of Ratmalana airport. The funds are required for the construction of a runway, taxiways, an apron and lighting facilities. Canada and Australia have already given Ceylon aid which has been used for the installation of teletype equipment and high frequency omni-range equipment. The Government proposes to repay the loan within a maximum period of 40 years. The Ministry of Finance points out that it has been obvious for a considerable length of time that there must be expansion and reconstruction of the airport to enable Ceylon to remain on international air traffic routes.

## L.M. CHIEF MECHANICAL AND ELECTRICAL ENGINEER



*J. F. Harrison*

### Mr. J. F. HARRISON, M.I.Mech.E., M.I.Loco.E.

• • • • •

As already recorded in MODERN TRANSPORT, Mr. John Frederick Harrison, chief mechanical and electrical engineer, London Midland Region, has assumed additional responsibilities and is concerned with the overall direction of all the mechanical and electrical engineering work of the region, including the chief mechanical and electrical engineer's department and the carriage and wagon engineer's department, as well as the technical aspects of the motive power and road motor engineer's departments. In view of the enlarged scope of his department his headquarters is now at Euston. Educated at Malvern Wells and Wellington College, he entered the service of the Great Northern Railway in February, 1921, and became a pupil of the late Sir Nigel Gresley at Doncaster. He was supernumerary foreman in the locomotive running department of the L.N.E.R. at Doncaster and afterwards at Kings Cross during 1924 and 1925. In 1926 he became running shed foreman in charge of Wigan and St. Helens and three years later was appointed technical assistant to the locomotive running superintendent at Liverpool Street. In 1930 Mr. Harrison became assistant to locomotive works manager, Gorton, chief mechanical engineer's department, and in 1937 moved to Doncaster as assistant locomotive works manager. In the following year he returned as locomotive works manager to Gorton, where he became mechanical engineer in 1941. Transferred to a similar post at Cowlaers in 1945, he was appointed assistant chief mechanical engineer at Doncaster in 1947 and, in February, 1950, was made mechanical and electrical engineer, Eastern and North Eastern Regions. In the following year he took up the similar appointment with the London Midland Region following the retirement of Mr. H. G. Ivatt. He is a member of the Institution of Mechanical Engineers and a vice-president of the Institution of Locomotive Engineers.

## IN PARLIAMENT

### Motorway Traffic Experiments

#### NO MOTOR INSURANCE INQUIRY

WHEN he introduced the motion for approval of the Special Roads (Classes of Traffic) Order in the Commons last week, Mr. G. R. NUGENT, Joint Parliamentary Secretary, Ministry of Transport, was tackled by Mr. J. A. SPARKS about the ban on abnormal indivisible loads—was this intended to apply only in the case of the two-lane Preston by-pass or did it relate to a three-lane motorway? Mr. Nugent responded that objection might be less on a three-lane carriageway but they thought it right to start with a general prohibition and to seize the opportunity for experiment. Winding up the debate, the Minister of Transport, as we reported last week, said that there might come a time, at a weekend, or for a week, when they might want to use the Preston by-pass for cars only, to see what sort of flow they got under those conditions. Excluding abnormal indivisible loads under the present Order would allow him to control their entry on occasions. He wanted to try as many permutations and combinations of traffic as possible on this motorway.

Mr. F. McLEAVY complained of the short notice given to interested parties for discussion of the draft Order and the accompanying regulations on speed limits. The Transport and General Workers Union received a letter on July 7 stating that the Order was being laid before the House and requesting a reply not later than July 21. On the following day the statutory instrument was laid. He realised (said Mr. McLeavy) that the by-pass was due to be opened before Parliament reassembled after the summer recess.

He questioned whether the braking capacity and loading of certain types of goods vehicles made it wise to remove them from the speed limit and said the views of the men who drove the vehicles had not been consulted. The welfare of drivers might be at stake. Mr. C. GIBSON said the men had been treated with contempt (he might have added the same about existing goods vehicle speed limits.—Editor). MR. GRESHAM COOKE said that he understood that about 1,000 abnormal indivisible loads up to 12 ft. wide passed through Preston in the course of a year.

#### Use of Miniature Buses

Answering a criticism by Mr. ERNEST DAVIES that miniature buses were of no great economic value in alleviating the rural bus problem, Mr. H. WATKINSON, Minister of Transport, said he understood that some companies were considering the use of these small buses, which had merit not only in rural areas.

#### Motor Insurance Inquiry Ruled Out

Mr. H. WATKINSON refused to appoint a committee of inquiry into the motor insurance market. He said the manner in which motor insurance was conducted, the premiums charged and any allowances given were matters within the discretion of the insurance market, and he saw no reason for inquiry into these matters.

#### Linked Traffic Lights Experiment

Mr. R. S. RUSSELL asked how the experiment with linked traffic signals on the Bath Road west of Slough was progressing. Mr. G. R. NUGENT replied that the installation had had the effect of keeping traffic on this road at an even but reduced speed. Also, there had been some reduction in accidents. It made for some rigidity of traffic movement, however.

#### O.A.P. Plight on New Bus Routes

Mr. H. WILSON asked the Minister of Transport what representations he had received about the inadequacy of the present law relating to bus travel concessions for old-age pensioners, particularly in new areas not served by bus routes operating in November, 1954. Would he introduce legislation to remove anomalies and hardship? Mr. H. WATKINSON said he had had none; he did not consider fresh legislation would be justified.

#### Alternative Routes to London Airport

Asked yet again what proposals he was now considering for improving passenger transfer from Central London to London Airport, Mr. H. WATKINSON, Minister of Transport, referred to the draft scheme for the construction of a motor road from the Chiswick flyover to the airport entrance tunnel published earlier this month. This, he said, would be pressed forward as quickly as possible. He awaited detailed proposals from the promoters of monorail and other systems and would then compare these with the scheme for a conventional rail link.

#### Labour Representative on B.R.S. Board

With specific reference to the recent retirement of Mr. Harold Clay from the board of management of British Road Services, Mr. ERNEST DAVIES wanted the Minister of Transport to give a general direction to the British Transport Commission to include among the members of the boards of management those who had had experience in the organisation of workers. Mr. H. WATKINSON declined to do so. The appointment of members to boards throughout its undertaking was, he said, the responsibility of the Commission. It was clear from the appointments made in recent years that it fully appreciated the value of a trade union background. The B.T.C. would find someone from the trade union movement.

## PUBLICATIONS IN FRENCH

### Distillers Plastics Group Enterprise

FOUR new publications in French have just been published by British Resin Products, Limited, and British Geon, Limited, companies in the Distillers Plastics Group, which manufacture a wide range of synthetic resins and plastics materials at Barry, Glamorgan, for sale throughout the world. These publications provide basic information on the three groups of products manufactured by B.R.P. and on the p.v.c. materials and nitrile rubbers manufactured by British Geon.

The publications concerned are *Livre de Donnees BRP No. 1—Resines Cellobond Adhesives*; *Livre de Donnees BRP No. 2—Resines Epok pour Enduction de Surface*; *Livre de Donnees BRP No. 3—Matières Plastiques, Rockite, Cellomold Distrene et Rigidex*; and *Livre de Donnees BG No. 1—Resines, Latex et Composés au CPV Breon Caoutchoucs et Latex Nitrile Breon*. Copies can be obtained on demand from the Information Department, Distillers Plastics Group, Devonshire House, Piccadilly, London, W.1, England.

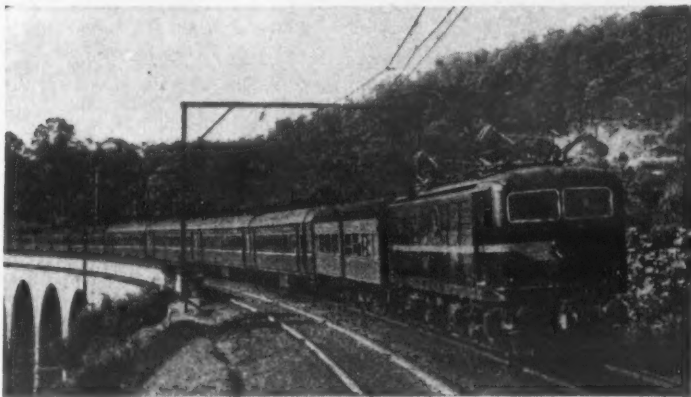


## ELECTRICAL EQUIPMENT for ROAD AND RAIL



Over 3,000 trolleybus electrical equipments have been supplied by Metropolitan-Vickers—the photograph shows one of the new fleet of Ashton-under-Lyne trolleybuses fitted with Metrovick equipment.

by **METROVICK**



Railway installations have been supplied for all parts of the world—the illustration shows one of 40 straight electric locomotives supplied to the New South Wales Government Railways.

**METROPOLITAN-VICKERS**

ELECTRICAL CO. LTD. - TRAFFORD PARK - MANCHESTER 17

An A.E.I. Company

K/V704



The considerable savings and increased comfort of modern high speed diesel railcars are now being enjoyed by many people all over the world.

In Britain, over 98% of the British Railways lightweight multiple-unit stock incorporates B.U.T. power units, which are also used in Northern Ireland, Eire, Holland, Portugal and by British Overseas carriage builders supplying railways in Australia, India, Rhodesia, Nigeria, Norway, Egypt and South America.



**BRITISH UNITED TRACTION LIMITED**  
96 Piccadilly, London, W.1. Telephone: GROsvenor 7121

Suppliers of Diesel Train Units  
from the combined resources of



## S.R. PROGRESS AT HASTINGS

### Automatic Train Washer

#### BUFFET CARS

**P**ROGRESS in the application of automation techniques to railway practice is represented by the control system of the new Southern Region carriage washing machine for diesel-electric trains at St. Leonards West Marina. The washer is similar in structure and mechanical principles to those which have been installed on the Southern since the thirties, but it has been equipped with an electronic control system which enables the washer to function completely automatically.

The system depends on a high-frequency track circuit which detects the passage of trains and by means of a relay sets the carriage washer in operation. A second track circuit switches the washer off after the train has passed. For a number of reasons the high-frequency track circuit does not in its present form replace the orthodox track circuit, but it may be used later to replace treadles. The machine also incorporates a new filter and flushing system, which is easy to maintain and enables complete water recovery.

#### Washing Machine

As already indicated the general arrangements and construction of the new machine at St. Leonards West Marina are the same as on those installed during recent years at Ramsgate and Bournemouth West. The basic working principle is that a train passes at 3 m.p.h. between two rows of revolving shafts to which is attached a large number of strips of cloth. Water under pressure is spread on the cloths and then directly on to the coaches to rinse them.

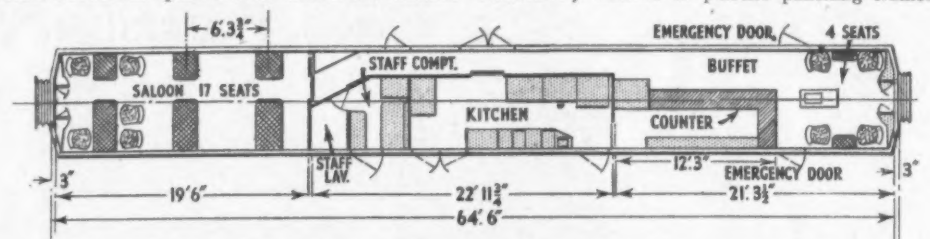
Eight 2-h.p. 80-r.p.m. geared motors driving the flails are controlled by an automatic contactor panel arranged to start the motors in pairs at short intervals in order to minimise the starting currents. Two electrically operated valves supplied at 80-volt d.c. through individual rectifiers control the water flow from an overhead tank to the flails.

After washing the train the water drains on to the concrete apron and then through filters into a sump in which is installed a pump for returning the water to the overhead tank. The starter for this pump is contained in the automatic contactor panel and is operated by electrodes in the sump which form part of a No-Flote water-level control system.

#### Manual and Automatic Operation

A selector switch for manual or automatic operation is provided on the panel of the control desk. When that switch is set to the manual position the plant is started by the operation of the start push-button and stopped by the operation of the master stop button. Switches are provided to enable the flail motors or their water-control valves to be switched off for test purposes or for drying the flails. To set the plant for automatic operation the selector on the control desk is switched accordingly and the automatic push-button operated. This energises the circuits to the relays controlling the machine to be set to wash trains travelling in the up direction only, the down direction only or in either direction. These switches control warning lights on the desk and by the track which indicate the direction in which automatic washing will occur.

Two repeater stations are provided at suitable positions in the area to enable this direction to be altered by the shunter as required. Emergency stop buttons are installed on the plant to stop the machine if necessary. After using these buttons under automatic operation conditions the controls



Layout of buffet car for London—Tonbridge—Hastings line diesel-electric train sets

must be reset by operating the automatic push-button on the desk or a similar button at one of the repeater stations. The control desk houses the automatic and manual control, the transformer supplying these at 50 volts and the No-Flote liquid level control for the pump. The plant lighting is also controlled from the desk.

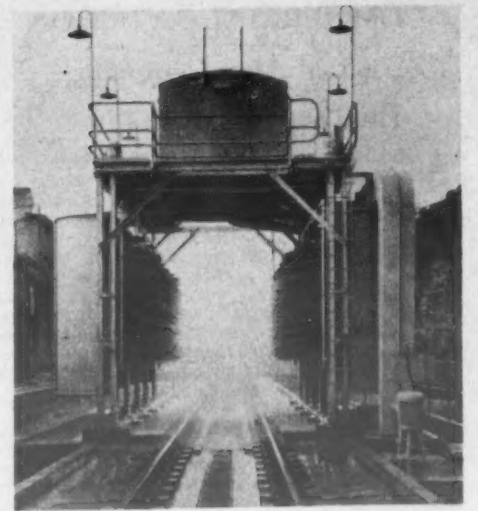
#### Automatic Control Relay Operation

When the plant is set for automatic operation supply cables to a special high-frequency short-track circuit equipment, installed by the signal engineer at each end of the plant, are energised. A train reaching one track circuit when approaching the plant causes a relay in the track circuit equipment to close; this in turn closes the relay in the control desk. This latter relay is arranged for instantaneous closing, but delayed opening. This is to enable the shortest train to reach the track circuit at the farther end of the plant before the relay opens due to the passage of a short train beyond the first track circuit. If the plant is set for washing in the direction in which the train is travelling the delay relay energises, through an auxiliary relay, a main relay which puts into operation the flail motors, the water valves and the pump liquid-level control. When the train reaches the second track circuit the delay relay is de-energised and another contact made to continue the supply to the main relay when the delay relay opens. When the end of the train leaves the second track circuit the plant shuts down except for the pump, which continues to function until the sump is emptied. A similar set of three relays is installed to control the washing of trains travelling in the opposite direction.

#### Phase Conversion

According to the sequence in which the train reaches the two track circuits so one set of relays is operated for the corresponding direction of travel of the train. The main relay to operate the plant is closed only if the plant has been preset for the direction of travel in which the train is moving. Contacts are added to provide manual control for switching off the flails if the water levels are overridden when the plant is set for automatic operation.

The flail and pump motors, control panel and control desk are standard and designed for three-phase operation. As only a single-phase supply is



Automatic carriage washing machine at St. Leonards West Marina

available it was necessary to install a Capacitor Serraris Arno pilot motor single- to three-phase conversion system with a temporary starter operated by the main relay in the control desk. This starter is arranged to make a contact at the completion of the starting sequence and then initiates the washing-plant operation. Provision is made for this pilot motor to continue running while the pump is required to empty the sump. The complete sequence of operation from the initiation by the train until all the functions of the machine are in operation takes ten seconds.

The overlay rail circuit is designed to close the front contacts of an associated relay on the passage of a train in the immediate vicinity of the connection between the equipment and the rail, and provides reliable detection of the occupation of this section of line. It therefore finds application where rail contacts or treadles would otherwise be used for this purpose. In its present form it does not provide a replacement for a true track circuit which causes a relay to release when the section is occupied because the purpose of a true track circuit is to give a reliable indication when the section is cleared. Rail circuit equipment operates at high frequency so that the voltage upon the rails is quickly attenuated on either side of the connecting point. As a result of this the rail circuit operates to pick up its associated relay only when axles approach within a distance of some 50 ft. of the indicating points.

Of the 146 vehicles, 116 are serviced at West Marina shed during each 24 hours and rotate for cleaning purposes along with 30 others berthed at Hastings, Ore and Tonbridge; the total provides a maintenance pool of 26 vehicles. Most of the cleaning is undertaken during the night, for which a staff of 24 is engaged. From 8 a.m. to 4.30 p.m. five other carriage servicing units deal with the remaining trains.

#### New Buffet Cars

There has recently been added to the London—Tonbridge—Hastings service a number of additional six-car diesel-electric units on which catering facilities, staffed by the Pullman Car Company, are provided. These new units are similar to those which initiated the diesel-electric service, but each includes a kitchen-buffet car in place of an open second-class carriage. The layout of the vehicle is in three main parts; the dining saloon is at one end, the kitchen and staff quarters in the middle, and the bar and buffet at the other end. A corridor with a service counter from the kitchen connects the saloon and buffet ends.

The dining saloon seats 17 passengers, and is attractively finished in plastics panelling framed

with sycamore. The bodyside panels below the windows are of plastics grey wood, and those between the windows pale pink in colour. Those above the windows and of the ceilings are of light grey matt finish. The saloon end is panelled in plastics grey wood with the draught screens at the gangway entrance doorway finished in glossy white plastics. The saloon transverse partition at the kitchen end is also finished in glossy white plastics, and the table tops are covered with blue-grey check plastics.

#### Kitchen

The kitchen, which has steel-framed walls with aluminium panels and cavities insulated with glass fibre, is equipped with a gas range with grill and hot closet. A refrigerator and ice-cream conservator is provided. The sink unit is of stainless steel with an electrically heated sterilising unit, and as much storage accommodation as possible has been provided above and below the table, space being allowed adjacent to the loading doors for the stowage of food hampers, etc. Communication is provided between the kitchen and buffet to facilitate service, and the coffee machine has been housed between the two.

A bottle cooler is provided under the end of the counter in the buffet, remote from the kitchen, and extractor fans are fitted in the roof over the kitchen and also over the coffee machine. The floor of the kitchen, the service area of the buffet and the corridor between the saloon compartment and buffet end of the vehicle, is covered in chequered aluminium plates, and the floor of the circulating area of the buffet end is covered with black marbled linoleum.

#### Interior Decor

The interior decor of the buffet end is generally similar to that of the saloon, and in addition to the four chairs and two tables at the end, a column table with shelves formed around a stainless steel tube is provided with convector heaters below table level. The panelling with ventilating grilles is of stainless steel and the sides finished in sky-blue matt plastics; the shelf and table are edged with stainless steel and covered with blue-grey check plastics. The counter of the buffet is also covered with blue-grey check plastics, the sloping front panels being of sky-blue matt plastics. In the bar the fascia above the counter and up to

(Continued on page 13)



## ROAD VEHICLE INDUSTRY

### Air Suspension For Routemaster

**J**UST returned to service on route 704 between Windsor and Tunbridge Wells is London Transport's prototype Green Line coach CRL4, which has Eastern Coach Works body and Leyland running units, after being fitted experimentally with air suspension at the rear in place of the original coil springs. RM2, one of the proto-



A one-piece roof, painted in pastel colour to reduce the effect of sunlight while letting in maximum light, and wings of Bakelite polyester-glass fibre are features of this bakery van, one of 50 for the London Co-operative Society

type buses with A.E.C. mechanical units which is at present operating on route 91 (Wandsworth—London Airport) has also been fitted recently with air suspension on the rear axle. Two different types of equipment have been fitted, that evolved by Firestone Tyre and Rubber Co., Limited, in association with London Transport on CRL4 and the system developed by Dunlop Rubber Co., Limited, in association with London Transport on RM2. London Transport intends to equip 50 or so production Routemasters with pneumatic suspension at the rear and says that if it proves satisfactory on these 50 vehicles there will be no great difficulty in applying it to the other RM-type buses on order.



Recently completed by Seddon Diesel Vehicles, Limited, a Perkins P6-engined Seddon Mark 16 5-tonner and 1,300 cu. ft. Luton-type body; right, Strachans composite coachwork and Bedford SB chassis make up this 30-ft. long Ardath display vehicle, which has fluorescent lighting by Crompton Parkinson, Limited, powered by four Crompton 6-volt 300 amp.hr. Armoured Plate batteries through a 230-volt a.c. rotary converter

The RM-type bus, which basically has suspension by coil springs all round and a fully automatic gearbox, has been designed as a replacement vehicle for London Transport trolleybuses, for which purpose 850 have been ordered. Potentially as well as the variable rate feature, which should give a comfortable ride under all conditions of loading, pneumatic suspension can provide a constant platform height and should require less maintenance.

### New Paint Finish for Bedford Cabs

**A**LL Bedford cabs, and the front-end sheet-metal parts fitted to chassis scheduled for special bodies, are now finished in the new grey primer-sealer that was announced two months ago for the 10-12 and 15-cwt. vans. This development in Bedford paint technique not only gives much more effective corrosion protection, but provides a greatly improved surface very simply made ready for finish coats of any type of paint. It is made possible by a new paint plant installed at a cost of more than £150,000. After the sheet-metal assemblies have been cleaned, and de-oxidised if necessary, they are given a phosphate coating which forms a key for subsequent layers of paint and gives a very high standard of rust protection to the metal. The cabs and van bodies then go through a completely new process—the underbody dip. They are immersed to waist height, enabling the primer to reach parts inaccessible to a spraygun and giving protection inside channels and in between double-skin body panels. After the underbody dip, the exteriors of cabs and vans are sprayed with red-oxide primer-surfacer and the interiors are sprayed with the same heavy primer as is used in the underbody-dip tank before stoving for 1 hr. at nearly 300 deg. F. Surfaces are wet-sanded and after passing through a dust-sealing area, where welded joints are pressure-sealed with a rubber-bitumen compound, the cabs and bodies are given a double coat of grey primer-sealer.

### Hartridge Needle-Lift Gauge

**E**FFICIENT nozzle reconditioning cannot be considered complete without ensuring that the needle lift remains within the manufacturer's limits. Excess lift can result in heavy seat wear, nozzle carbonisation, smoky exhaust and over fuelling. The new Hartridge needle-lift gauge has been designed to enable a direct measurement to be easily and rapidly taken. The instrument consists of a large dial gauge, which provides readings of .01 mm. from zero up to 6 mm., mounted on a machined steel stand. Three measuring anvils, which screw into the gauge, are included to cover the conventional C.A.V., Bosch, Bryce, Simms, American-Bosch, Spica and other types of R.S.T.W. and V sizes. A steel bush

having a ground face is fitted into the stand to provide a true location surface to contact the nozzle face. A circular ground-steel setting disc enables a correct zero to be obtained from the face of the steel bush, the gauge is fully adjustable. After once setting to zero a direct reading of needle lift is obtained by offering the nozzle complete with needle on to the instrument so that the ground face of the nozzle body contacts the ground face of the steel bush.

### Thrifty P6-engined Thames

**A**VERAGE fuel consumption of 11 m.p.g. has been recorded on a 3,000-mile tour of France undertaken by a Perkins P6-engined Ford Thames 7-ton chassis carrying a mobile demonstration body in the service of Hoover, Limited. With a gross weight of 12 tons the vehicle visited 51 districts throughout France in 90 days.

### Two-Millionth B.M.C. Vehicle Exported

**L**AST month saw the dispatch of the two-millionth B.M.C. vehicle to be exported since the war. The vehicle, one of the new 7-ton lorries, left Birmingham bound for Malaya. The British Motor Corporation stated that its exports continued to climb and in the first quarter of 1958 broke all previous records with a 21 per cent increase over the same period of 1957.

### Hose-Clip Screwdriver

**M**UCH groping in awkward places is likely to be saved by a special hose-clip screwdriver introduced by Herbert Terry and Sons, Limited, Redditch. The new tool is stoutly made and has its blade tip shrouded by a short tube that fits over the head of the hose-clip screw, thus ensuring positive location of the blade in the slot. It costs 3s. 6d.

### Perkins Sales Engineering Courses

**A**SERIES of sales engineering courses is being reintroduced by F. Perkins, Limited, to cover the requirements of salesmen operating in the vehicle, agricultural, industrial and marine



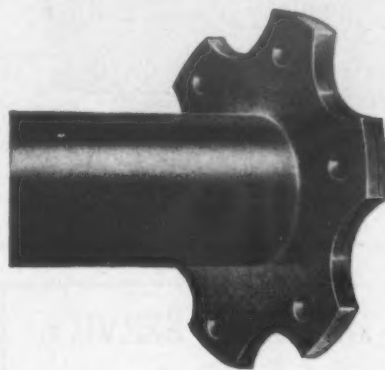
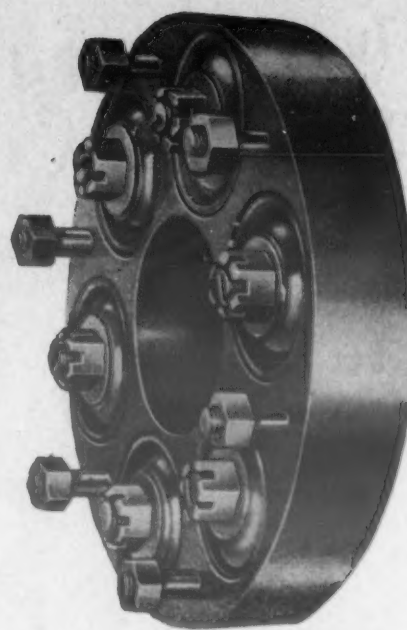
A group of Portuguese journalists being met at London Airport by Mr. H. E. (Bruce) Ellis, A.C.V. joint public relations officer (extreme right) with a new air-suspension Bridgemaster for a visit to the A.E.C. factory at Southall to see buses for Lisbon under construction

equipment designed and produced by the Hymatic Engineering Co., Limited, Redditch, Worcs, which has just been installed at a large electrical manufacturer's works.

### Hire Purchase Charge Reduction

**W**ITH effect from July 1, the Society of Motor Manufacturers and Traders and the Finance Houses Association have agreed that the maximum charges under the code of charges and commissions introduced last September in respect of hire purchase and credit sale transactions on motor vehicles shall be 8 per cent on new motor vehicles having four or more wheels, and 9 per cent on used motor vehicles having four or more wheels and first registered not more than five years previously, representing a reduction of 1 per cent. The charge on motor vehicles having less than four wheels and all motor vehicles first registered more than five years previously is reduced ½ per cent to 11 per cent. All charges quoted are for 12 months and other periods are arranged for pro rata.

the toughest  
shock-absorbing  
coupling yet  
devised to meet  
modern needs



How much rubber... what kind of rubber... what static torque, what dynamic torque will the coupling have to withstand...? LAYCOCK ENGINEERING have all the answers, because they have been anticipating future demands since the 1930's. When the suggestion of increased bhp from the same litrage keeps coming up, LAYCOCK engineers are not caught unawares—the appropriate coupling exists for every newly designed vehicle, because LAYRUB designers are there at the design-board stage, anticipating the future.

## LAYRUB flexible couplings

Member of the

Birfield Group

Enquiries to

LAYCOCK ENGINEERING LIMITED

MILLHOUSES · SHEFFIELD 8.

Tel: Sheffield 74411



In all parts of the world Thornycroft chassis are in demand, not only for orthodox transport, but for the specialised requirements of Industry and Commerce. Four- and six-wheel drive "Nubians" operate in under-developed areas where roads are almost non-existent and "Big Bens" and "Mighty Antars" enable us to offer a range capable of handling gross weights of up to 224,000 lbs. (101,000 kgs.). Illustrated above is one of a number of "Big Ben" transporters operated by the Qatar Petroleum Co., Ltd. It is moving a Woodfield-Ideco portable rig to a drilling site at Dukham, Qatar.

An illustrated Brochure gives full details of our export range; publication TCV.1410 describes the "Big Ben". Copies on request.

## THORNYCROFT VEHICLES

for SPECIALISED OILFIELD TRANSPORT

TRANSPORT EQUIPMENT (THORNYCROFT) LIMITED

THORNYCROFT HOUSE, SMITH SQUARE, LONDON, S.W.1 Abbey 8000



To increase  
your score  
GET  
THINGS  
STRAIGHT



and the straight fact is that there's a Bawn tanker tailor-made for every liquid moving job. Petrol, chemicals, oil, hot liquids, cold liquids—our tankers cope with them all, conveying at normal or maintained temperatures as required. For years we've taken the worry out of the tricky job of moving liquids. Why not give us a ring?



**W.B. BAWN**  
& COMPANY LIMITED

Byron Works, Blackhorse Lane, London, E.17  
Telephone: LARKWOOD 4411/4



D.I

ALSO MANUFACTURERS OF "HELMSMAN" STEEL EQUIPMENT AND STEEL PLATE FABRICATIONS

**PICKFORDS HEAVY HAULAGE SERVICE**  
*Abnormal Loads • Lifting*  
MOBILE CRANES FOR HIRE • Branches in all large towns

**SERVICE  
PLUS**



An efficient and dependable Factory to Farm transport service is demanded to serve Agriculture. British Railways are proud to provide such a service, but they offer something more—SERVICE WITH A PLUS.

High efficiency in factory production is obtained from regular output. Demand is often irregular. SERVICE PLUS bridges the two conflicting demands and solves the problem.

British Railways collect in bulk regularly from the factory, undertake intermediate storage if needed, and deliver to customers in small quantities. They will keep stock records and issue despatching notes.



The Station Master or Goods Agent will keep stock records and send advices to customers on your own notepaper. They will also be glad to supply any information about these services.

These are a few of the extra services which can be had and in any combination.

Commodities already handled successfully on a SERVICE PLUS basis include fertilisers, cattle food, packed and canned goods, grain, flour, medicines, oil, grease, farm and garden requisites.

BACKING THESE SERVICES ARE

Nearly 800 express freight trains daily. The largest motor collection and delivery fleet in the country. The experience of staff who deal with more than 3 million tons of this sort of traffic annually. More than 5,000,000 sacks for hire. A readiness second to none to meet any special requirements in service and equipment which you may wish.

**BRITISH RAILWAYS**

## INDIAN DIESEL RAILCARS

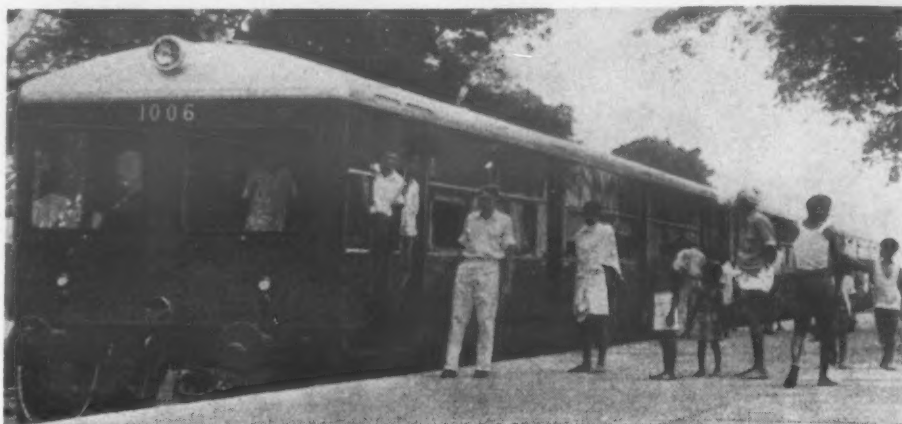
### Australian-built with B.U.T. Equipment

THE second shipment of 12 Commonwealth-built diesel railcars, which are being supplied to India by Australia under the Colombo Plan, left Fremantle recently for Madras. They are fitted with diesel engines, transmission equipment and control gear supplied by British United Traction, Limited, the company which has been responsible for the traction equipment of 98 per cent of the present British Railways multiple-unit diesel rolling stock.

The railcars will operate on the Northern Rail-

are fitted with Westinghouse air brakes with which the control system is interlocked. Painted in Tuscan red livery, the railcars have been fitted with brass plaques bearing an outline map of Australia, with the words "A gift to India from Australia under the Colombo Plan."

Embarkation lights are provided on the outside of the cars and are interlocked with the control system so that they come on automatically when the train comes to a halt at a station and are extinguished when the train leaves. This is normal



One of 12 B.U.T.-equipped Australian-built diesel railcars supplied to Indian Government Railways under the Colombo Plan. A further 12 units are in course of delivery

way of India between Lahore and Ludhiana and also from Ambala Cantonment, after they have had the distinction of travelling the 1,359 miles of the Grand Trunk Route between Madras and Delhi under their own power. This will probably be the longest diesel railcar run anywhere in the world. On the Indian railway system certain of the dense suburban services in the Bombay, Calcutta and Madras areas are being electrified; but there are a number of dense traffic areas in the country which for various reasons it is not practicable to electrify. It is in such areas that the new diesel railcars are being set to work.

The Indian B.U.T.-equipped broad-gauge railcars are 70 ft. long over headstocks, have 48 ft. 6 in. bogie centres and a bogie wheelbase of 9 ft. 6 in. They weigh 46 tons and have full-width driver's cabs at one end and half cabs at the other. The cars

Indian railway practice to enable safe passenger movements at the many stations where there are no platform lights.

Each car is fitted with two B.U.T.-Leyland 926 cu. in. six-cylinder horizontal direct-injection diesels, the power of which is transmitted through a fluid coupling, freewheel shaft and air-operated four-speed epicyclic gearbox. The axle-mounted reversing final drive is of the double-reduction type and all controls are electro-pneumatic.

The engines were specially designed for installations where car weights have had to be increased to meet heavy operating conditions or where it is necessary to increase train performance. With bore and stroke dimensions of 5½ in. and 6½ in., the maximum rating under conditions of normal temperature and pressure is 230 b.h.p. at 1,900 r.p.m., maximum torque being 710 lb./ft. at 1,150 r.p.m.

## Albion Claymore On Test

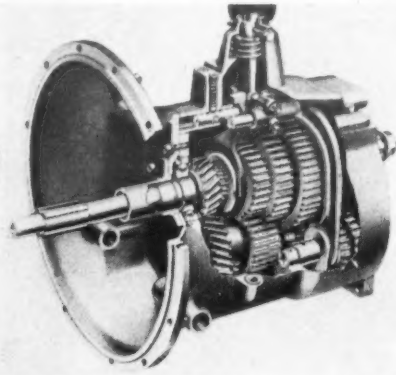
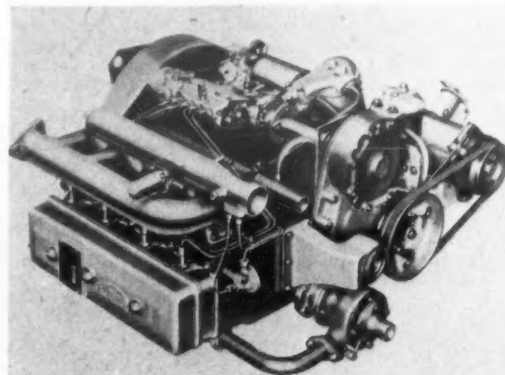
(Continued from page 7)

spacious cab and this is run a close second by the very low noise level in the cab, which permits conversation at normal voice level. The vehicle we tested was fitted with the prototype pressed-steel cab, which had all the modern amenities and comfort for the crew provided for, such as fully adjustable driver's seat, built-in heater-demister and conveniently placed controls and instruments. The test vehicle was the 11 ft. 10 in. wheelbase CL3N which, fitted with Homalloy 16-ft. light-alloy platform and headboard, had a kerb tare of 2 tons 19½ cwt. A load of ballast weights and the test equipment brought gross weight to 8 tons 0½ cwt., representing a genuine payload of 5 tons 1½ cwt. and leaving a margin inside the 8½-ton recommended maximum running weight of 4½ cwt. for a crew of three. With the load evenly disposed over the body floor and with the crew dis-

formance in the gears was entirely satisfactory and even with the high axle ratio, which gave an overall ratio for first gear of 37 to 1, the fully loaded vehicle was started comfortably on a 1 in 5 gradient and the average times of 12.5 and 27.9 sec. to reach 20 and 30 m.p.h., respectively from rest were well up with the best in the diesel-engined 5-ton class.

### Fuel Consumption

Although primarily designed to meet the transport requirements of the distributive trades, the 5-ton Claymore appears entirely suitable for and capable of showing good economy in trunk-haulage service. Our continuous-running fuel consumption check was made on a 20-mile out-and-back course over A811 between Buchlyvie and Stirling. This is all fairly narrow, about half hilly and winding and half fairly straight and level. On the outward



Accessibility from above of all components needing regular attention is feature of the Claymore underfloor diesel engine, which now develops 72 b.h.p. at 2,200 r.p.m.; right, a sectional view of the David Brown four-speed constant-mesh gearbox

mounted, the front axle carried 2 tons 11½ cwt., slightly less than a third of the total weight, indicating practically ideal laden weight distribution with the crew aboard.

Our test was carried out in Scotland over a 93-mile hilly course from Glasgow over the Campsie and Fintry hills to Stirling and back to the Scots-toun Works through Drymen. The route was probably a little more arduous than our standard route near London with generally narrower roads and rather longer gradients. The handling characteristics and stability of the Claymore were excellent under all conditions and the good lock and light positive steering assisted in keeping the vehicle well on to its own side of the road on difficult bends and corners. On the open road we found the gear ratio coverage a bit sparse, with a fairly wide gap between third (10.23 to 1 overall), in which 28-29 m.p.h. was the maximum attainable, and top (5.85 to 1), in which it was possible to reach 50 m.p.h. on the level. The feeling that one wanted to change down from top before there would be any advantage in so doing was probably because outstanding low-speed torque is not the strongest feature of the EN250 engine, though doubtless its performance will be improved in this respect.

This aspect of performance was also brought out in the times required to accelerate in top gear from 10 to 20 and 30 m.p.h., which averaged 193 and 42 sec. respectively. These results were taken with the higher of the two axle ratios, which is more suited to longer-distance operation and it would probably be an advantage to opt for the 7.2 to 1 axle for vehicles to be used primarily for urban distribution or in exceptionally hilly areas. Per-

leg, which has a noticeable descending bias, the Claymore returned figures of 22.2 m.p.g. at 30 m.p.h. average speed while the less favourable return leg brought the overall averages to 20.6 m.p.g.—representing a very creditable 168.5 gross ton-miles per gal.—and 28.6 m.p.h. A likely return in average longer-distance return-empty service appears to be 22 m.p.g. or better, while an indication of probable consumption at the other extreme—a vehicle used principally in frequent-stop urban service—is given by our overall fuel consumption check. In this, for 93 miles of mainly hard driving, which included numerous stops and much full-throttle low-gear work in acceleration, braking and hill-climbing tests, consumption worked out at 16.43 m.p.g.

Lockheed two-leading-shoe hydraulic brakes on the Claymore, operated through a Clayton Dewandre Hydovac unit, provide about 43 sq. in. per ton of gross laden weight and we found the combination gave an excellent service brake. In a number of carefully measured stops from 30 m.p.h. on dry level tarmac, an average distance to stop from the point where the pedal was pressed of 48 ft. was recorded and the Tapley meter reading was consistently 73 per cent. The handbrake alone from speeds around 20 m.p.h. produced Tapley figures of 36-37 per cent. We found that the Albion patent throttle valve in the induction manifold, which takes the place of an exhaustor, maintained vacuum in the reservoir around 20 in. Hg. under all normal driving conditions. After the vacuum had been deliberately exhausted, a couple of bursts of the engine sufficed to return the gauge reading to normal.



## MODERN AIRWAYS and COMMERCIAL AVIATION SECTION

## AER LINGUS IN 1957-58

## Profit on Operating Account

## AER RIANTA MAKES MONEY ON MANAGEMENT

IN the year ended March 31, 1958, Aer Lingus made a surplus of £33,719 on operations and, for the first time in its history, the company's revenue topped £3 million. The total from all sources was £3,023,551 and expenditure amounted to £2,989,832 leaving a surplus on operating account of £33,719. During 1957-58, the airline operated 18,091 revenue flights and carried 441,363 passengers and 8,334 tons of freight and mails.

The surplus of £33,719 was reached before charging the company's contributions to the staff superannuation funds. These came to £77,393 and left a deficit of £43,674, which compared with a surplus of £158,548 for 1956-57. After charging loan interest and taking credit for an excess provision for taxation, the deficit rose to £57,224. This has been set off against a profit of £89,878 made on the sale of aircraft and other equipment disposed of during the year, leaving a credit balance of £32,654, which has been added to the surplus of £67,061 brought forward from the previous year, making a total credit of £99,715. This total has been used to write down by £50,000 the deferred expenditure on training and development which arises mainly in connection with new aircraft before they go into service. The balance, £49,715, has been carried forward into the current financial year.

## Revenue

Revenue from all sources at £3,023,551 showed an increase of 5 per cent on the revenue of £2,891,406 for the previous financial year. Passen-

of passenger traffic between Dublin and Britain increased slightly and now approximates 25 per cent. Much remains to be done.

"I believe that the static state of the market is purely temporary, but even in an improving cross-channel market we are not going to have anything like the rate of growth we have been experiencing up to 1956. We must, therefore, look to the continental market and the transatlantic market as vital aids to our further growth."

## Aerlinthe Eireann

Commenting on Aerlinthe Eireann, a company spokesman said: "It is too early yet to comment on the results achieved by the new service other than to say that the passenger numbers are up to the estimates prepared in late 1957. The service was inaugurated in less than four months after the date on which the company was authorised to go ahead. Experience on other routes and in the aviation business generally shows that even under favourable circumstances and with ample time for promotion, a new service never realises its full potential during the first two years of operation. It would consequently, be too much to expect that a new operator on a route as highly competitive as the North Atlantic would achieve spectacular results right away. It will take time and a good deal of effort and expenditure to get the new Irish service across to the public and to build up traffic to acceptable levels. A good deal of the company's expenditure in the initial period will be development expenditure which should be regarded as part of the initial investment in the route—an invest-

## TRAFFIC, OPERATING AND FINANCIAL STATISTICS

TRAFFIC		1957-58	1956-57	Vari- ation %
Capacity ton-miles (ctms) offered		17,826,000	16,935,000	+ 5
Revenue ton-miles (rtms) sold		11,513,000	11,333,000	+ 2
Overall revenue load factor		64.6%	70.7%	- 9
Break even load factor		68.9%	69.9%	- 1
Revenue passenger load factor		68.7%	73.9%	- 7
Break even passenger load factor		74.1%	72.9%	+ 2
Revenue passengers carried		441,363	437,809	+ 4
Cargo tons		6,596	6,012	+ 9
Mail tons		1,765	1,764	-
Excess baggage tons		238	279	- 15
Average passenger journey (miles)		241	232	+ 4

OPERATING		1957-58	1956-57	Vari- ation %
Number of revenue flights		18,091	18,173	-
Revenue miles flown		4,269,000	4,068,000	+ 5
Revenue hours flown		28,105	27,659	+ 2
Aircraft utilisation (revenue hours per annum per aircraft)		1,573	1,627	- 3
Average stage distance (miles)		211	205	+ 3
Average flight duration (minutes)		93	91	+ 2

FINANCIAL		1957-58	1956-57	Vari- ation %
Total revenue		£3,023,551	£2,891,406	+ 5
Operating expenditure (including depreciation and superannuation)		£3,067,225	£2,732,858	+ 12
Operating deficit (after providing for depreciation and superannuation)		£43,674	£158,548	-
Net surplus before allocation to training and development expenses		£32,654	£87,061	- 62
Total revenue per revenue hour flown		£107.4	£104.5	+ 3
Operating expenditure per revenue hour flown		£108.9	£98.8	+ 10
Operating deficit per revenue hour flown		£1.5	£4.7	-126
Total revenue per ctm		3/4.7	3/7.3	- 6
Operating expenditure per ctm		3/5.3	3/4.9	+ 1
Operating deficit per ctm		0.6d.	2.4d.	-125
Operating revenue per rtm		4/11.9	4/10.6	+ 2
Operating expenditure per rtm		5/3.9	4/9.9	+ 10
Average fare per passenger		£5.71	£5.37	+ 6
Average fare per cargo ton		£31.4	£30.6	+ 3

ger revenue contributed £2,392,200 and although this figure showed an increase of £47,467, the company carried 16,000 passengers fewer. The decrease in the number of passengers carried is largely attributable to a slowing down in the growth rate on a number of cross-channel routes, coupled with the participation of British European Airways on the London, Birmingham and Manchester routes from Dublin following the revision of the Anglo-Irish air agreement in 1956.

To counteract the loss of traffic on cross-channel routes, Aer Lingus opened new routes during the early summer of 1957 through Manchester to points in Belgium, Germany, Italy and Switzerland. Total Continental traffic from Dublin rose by 37 per cent from 17,318 to 23,700 and Continental traffic from Manchester and from routes out of Zurich, Amsterdam, Brussels and Lourdes rose by 96 per cent from 7,199 to 14,143.

## Expenditure

Total expenditure for the year (exclusive of the company's contribution of £77,393 to staff superannuation funds) was £2,989,832 and showed an increase of £325,000 on the previous year's expenditure. Costs rose under almost all heads. The largest increases were in aircraft fuel and oil, landing fees, crew pay and other operating expenses which were up by 17 per cent. Maintenance and overhaul costs were up by 13 per cent on 1956-57 and the aircraft standing charges and the direct operating expenses increased last year with the introduction of larger aircraft and the opening up of longer routes.

The company's unit cost (capacity ton-mile) compares favourably with that of other European airlines. It has, however, been rising slowly for the past few years influenced necessarily by the continued rise in payroll, fuel costs, landing fees, handling charges and depreciation. Savings brought about by improvements in efficiency tend to be offset by increases in general price levels. It is explained that heavy additional expenditure following the acquisition of new aircraft and the opening of new routes can be regarded as expenditure with an eye to the future since some of the benefits which it will bring will be felt in the years ahead. The new aircraft are being integrated in the company's route network, including new routes, and passengers in increasing numbers as well as freight in increasing volume will, it is expected, bring back this initial outlay in the years ahead.

## Increased Production

Aer Lingus produced more in the year under review than in the previous year. Capacity ton-miles were up by 11 per cent, but revenue ton-miles increased by less than 2 per cent and, as a result, the overall load factor declined by 9 per cent. The report records that, for the first time in the company's history, financing on a long-term basis has been obtained from sources outside the Exchequer. During the period, cash resources were strengthened by the sale of three DC3 aircraft and spares at satisfactory prices. The delivery of the Friendship aircraft, which begins in the latter part of 1958, will enable the company to put more of its DC3 aircraft on the market for sale and the proceeds of these sales will provide a source of further strength to the company's cash resources.

## The Future

In considering the future prospects of Aer Lingus, Mr. J. F. Dempsey, the general manager, writing in *Aer Seala*, the staff magazine, said: "Let us face the situation squarely; the total number of passengers—all carriers, both air and surface—travelling between Ireland and Britain showed no increase over the previous year. The air share

ment which should begin to yield worthwhile results in the years to come."

As no services were operated during the year under review there were no transactions falling to be dealt with in an operating account or in a profit and loss account.

## Aer Rianta

Aer Rianta, of which the main function is the management of Dublin Airport, reports another satisfactory year. Revenue (not including catering) was up from £146,756 in 1956-57 to £166,931 and showed a surplus of £33,411. Catering turnover increased from £180,940 to £206,906 and yielded a net profit of £14,087. The total surplus on the airport management account was £47,498 compared with £32,468 for the previous year. The improvement of over £15,000 in the total surplus came mainly from landing fees income which was over £17,000 or 19 per cent higher.

The surplus of £47,498 on airport management including a profit on catering has been reduced by a deficit of £13,995 on the general administration account leaving a balance of £33,503 payable to the Department of Industry and Commerce in respect of the financial year 1957-58. Over 501,000 passengers passed through the airport in 1957-58. This was an increase of some 41,000 or 9 per cent over the figure recorded in the previous year.

The weight of cargo handled was 6,970,765 kg., an increase of 9 per cent on the previous year's figure. The weight of mail handled was 1,616,035 kg., which showed little change from the previous year's figure. The continuing increase in the volume of traffic at Dublin Airport has made it necessary to increase accommodation and a substantial number of building projects was put in hand during the year.

## HASTINGS PROGRESS

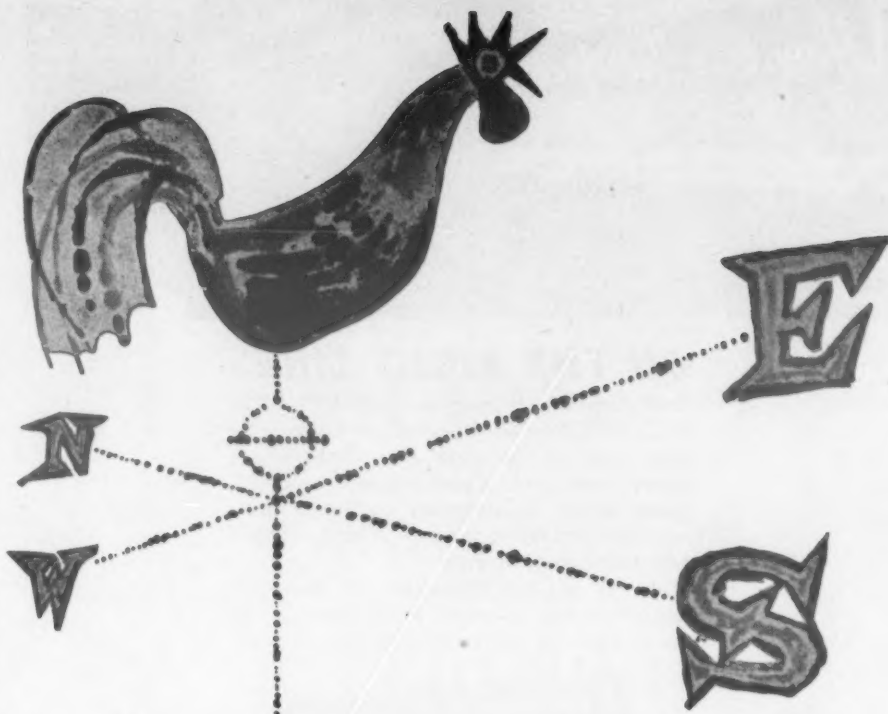
(Continued from page 10)

the ceiling is white with a soffit of sky-blue matt plastics and a lower fascia panel of white.

The buffet counter area is illuminated by concealed electric lighting directed at the back bar display. The lighting in the buffet and saloon is by electric roof lamps with reflectors, and warmth is provided by bodyside convective electric heaters. Two bodyside doors are fitted in the buffet, which can be used as exits by the passengers in case of emergency. Double swing self-closing doors and draught screens are fitted at each end of the car and adjacent the screens, vertical heaters are recessed into the ends of the coach. A 120-gal. water tank is carried on each underframe for catering purposes, with an electrically operated compressor suspended in a resiliently mounted case adjacent to it, for raising the water to the service taps through pipes at a low pressure varying from 5-12 lb. per sq. in. Water is also supplied by this means to the staff lavatory; this obviates the necessity of providing any water tanks in the roof, thereby considerably reducing the cost of maintenance.

## Gas Supply

The condensing units for the refrigerator, ice-cream conservator and bottle cooler, are also carried on the underframes, as well as the container for the propane gas bottles required for the cooking range, grill and hot closet. The gas bottles are arranged in two banks, each of two, and provision has been made for changing the bottles through a trap door in the corridor floor, thereby eliminating the danger which would otherwise be incurred if the bottles had to be changed from track level over the live rail.

Shell meets the  
demand for DERV  
all over Britain

To give the best possible service to the increasing number of diesel powered transport vehicles now in operation, Shell have established a nation-wide network of agencies selling SHELL DERV. Wherever you send a diesel vehicle you can be sure that a SHELL DERV station will be close at hand. Your drivers can pay cash for SHELL DERV or by showing a Shell "Authority Card" they can refuel by a system of pre-arranged credit at any Shell agency.



YOU CAN BE SURE OF SHELL DERV

BLACKPOOL CHOOSE  
ALHAMBRINAL  
Permanent Interior Decorative Panelling  
EXCLUSIVELYEVERY BLACKPOOL CORPORATION  
BUS, TRAM AND TRAILER IS FITTED  
THROUGHOUT WITH ALHAMBRINAL  
ROOF PANELS, BODY PANELS, SIDE PANELS, SEAT BACKS

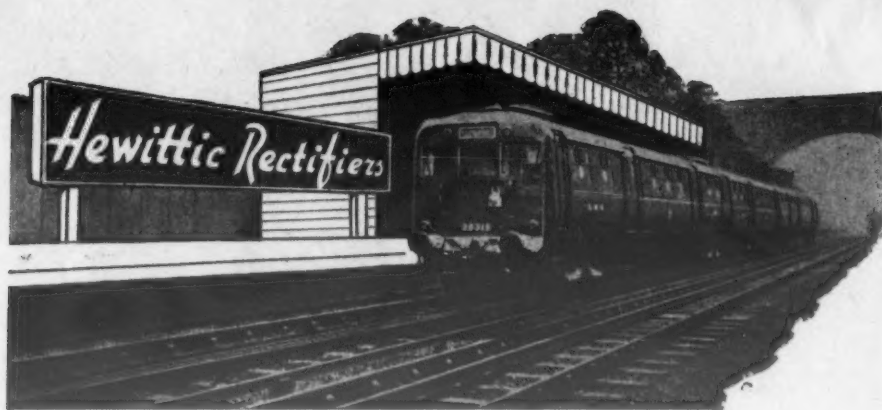
"ALHAMBRINAL," the permanent decorative interior panelling, is extensively used for the lining of ceilings, under-racks, body panels and seat backs in motor coaches, buses, trolley-buses, tramcars, railcars and railway carriages. "ALHAMBRINAL" is produced in a wide variety of designs and colours which are solid throughout. It is practically indestructible under ordinary conditions of wear. It is light in weight, non-inflammable, non-corrosive and a non-conductor of heat or cold. It is ready to fix and can be supplied on aluminium, hardwood or plywood backing, cut to sizes and ready to erect.

Thomas Thomson Sons & Co. (Barrhead) Ltd.  
FERENEZE WORKS BARRHEAD near GLASGOW.

PHONE: BARRHEAD 1038-9

GRAMS: "WATERPROOF" BARRHEAD

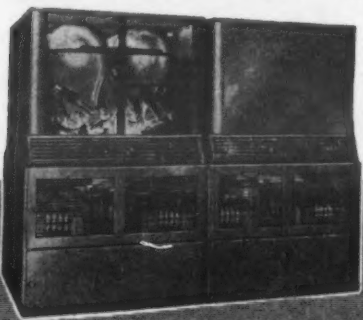




## ON THE RIGHT LINES

Electrification schemes in which HEWITT RECTIFIERS are specified as the converting plant are on the right lines—lines which stretch back over a past experience of 30 years in the manufacture of heavy duty rectifiers and which lead on to long, reliable and economical service.

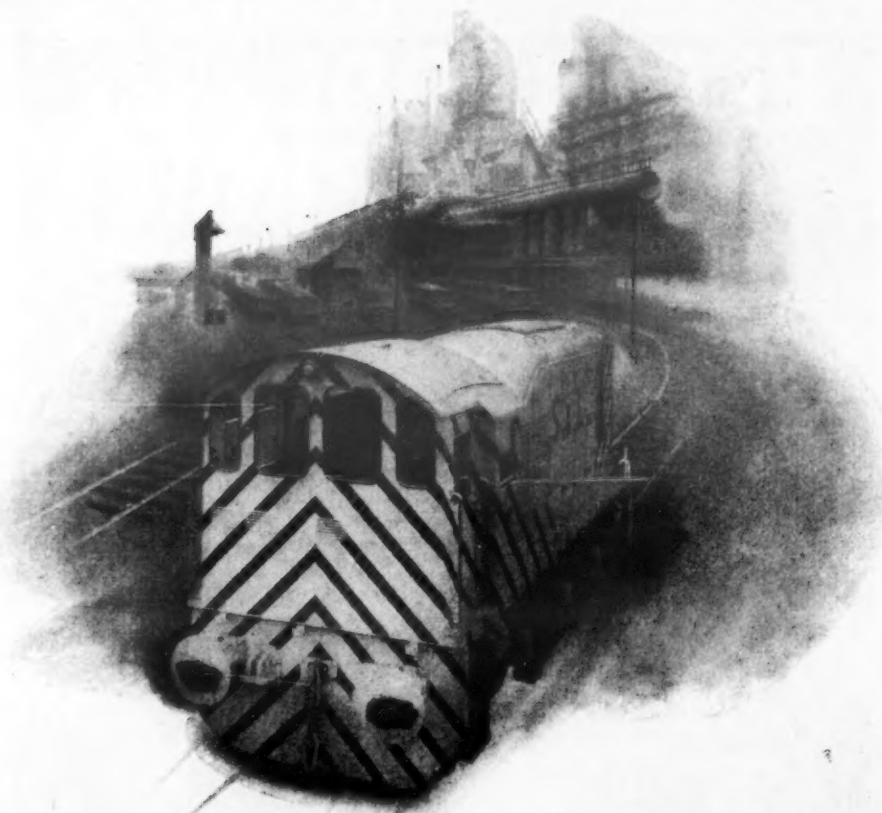
Over 1½ million kilowatts of Hewitt Rectifiers are in world-wide operation in installations of up to 30,000 kW capacity.



HACKBRIDGE AND HEWITT ELECTRIC CO. LTD., WALTON-ON-THAMES, SURREY

Telephone: Walton-on-Thames 760 (8 lines) Telegrams: "Electric" Walton-on-Thames

Overseas Representatives: ARGENTINA: H. A. Roberts & Co., S.R.L., Buenos Aires. AUSTRALIA: Hackbridge and Hewitt Electric Co., Ltd., 171 Fitzroy Street, St. Kilda, Victoria; N.S.W., Queensland, W. Australia: Elder, Smith & Co., Ltd.; South Australia: Parsons & Robertson, Ltd.; Tasmania: H. M. Bamford & Sons (Pty.), Ltd., Hobart. BRAZIL: Oscar G. Mors, São Paulo. BURMA: Neonite Manufacturing & Trading Co., Ltd., Rangoon. CANADA: Hackbridge and Hewitt Electric Co. of Canada, Ltd., Montreal; The Northern Electric Co., Ltd., Montreal, etc. CEYLON: Envee Ess, Ltd., Colombo. CHILE: Sociedad Importadora del Pacífico, Ltda., Santiago. EAST AFRICA: Gerald Hise (Lighting), Ltd., Nairobi. EGYPT: Giacomo Cohen & Fils, S.A.E., Cairo. FINLAND: Sähkö-Ja Koneilike O.Y. Hermes, Helsinki. GHANA, NIGERIA AND SIERRA LEONE: Glyndora, Ltd., NETHERLANDS: J. Kater E.I., Ouderkerk a.d. Amstel, Amsteldijk Noord 103c. INDIA: Steam & Mining Equipment (India) Private, Ltd., Calcutta; Easun Engineering Co., Ltd., Madras. IRAQ: J. P. Bahoshy Bros., Baghdad. MALAYA, SINGAPORE AND BORNEO: Harper Gillman & Co., Ltd., Kuala Lumpur. NEW ZEALAND: Richardson, McCabe & Co., Ltd., Wellington, etc. SOUTH AFRICA: Arthur Trevor Williams (Pty.), Ltd., Johannesburg, etc. CENTRAL AFRICAN FEDERATION: Arthur Trevor Williams (Pty.), Ltd., Salisbury. THAILAND: Wichien Phanich Co., Ltd., Bangkok. TRINIDAD & TOBAGO: Thomas Peake & Co., Port of Spain. TURKEY: Dr. H. Salim Oker, Ankara. U.S.A.: Hackbridge and Hewitt Electric Co., Ltd., P.O. Box 234, Pittsburgh 30, Pennsylvania. VENEZUELA: Oficina de Ingenieria Sociedad Anonima, Caracas.



after extensive tests and trials

Stewarts & Lloyds Limited state that the Brush-Traction Diesel-Electric

Locomotives supplied over twelve months ago for shunting services in the integrated Iron and Steel Works at Corby are giving very satisfactory service.

Brush Traction Locomotives, recognised for their performance under the

most arduous conditions, are also giving outstanding service to

the Steel Company of Wales; Consett Iron Co.; Lever Bros.;

and other large industrial users.



Illustrated above is a 0-6-0 Diesel-Electric Shunting Locomotive of 400 H.P. made by Brush Traction Ltd.

**Diesel-Electric Shunting Locomotives**  
—the logical choice

Write for literature on Diesel-Electric Shunting Locomotives to:

**BRUSH TRACTION DIVISION**  
BRUSH ELECTRICAL ENGINEERING CO. LTD., LOUGHBOROUGH, ENGLAND

A Member of the Hawker Siddeley Group

## WIDENED SCOPE OF LOCOMOTIVE BUILDER

Beyer Peacock (Hymek), Limited

THE firm of Beyer Peacock and Co., Limited, has for over a century enjoyed a worldwide reputation for supplying locomotives designed and built to suit the specific requirements of railways whose needs have varied widely. Although attempts have been made by some overseas builders to impose standards on overseas railways, conditions are so different, not only from country to country, but even from region to region, that inevitably the most suitable form of motive power must also vary.

In certain circumstances, when water is plentiful, cheap fuel is available locally, and hauls are heavy and long, the steam locomotive can still be the most economic form of transport. For over half a century we have been told periodically that the steam locomotive is to be entirely replaced; it has certainly "been an unconscionable time a-dying," for even now, when changed circumstances beyond the realm of mechanics have hastened its replacement in some spheres, the world's railways in total still handle the greater portion of their traffic by steam, and will continue to employ this power for years to come.

Although Beyer Peacock continues to build all forms of steam locomotives, and particularly Beyer-Garratts, to meet the continuing demand for these, inevitably some railways to which it has supplied locomotives are, where conditions now warrant this, introducing diesel traction.

### Every Form of Motive Power

To meet the demand a new company styled Beyer Peacock (Hymek), Limited, has been formed, as announced in our issue of May 17. It will be recalled that the partners in this are Beyer Peacock, Armstrong Siddeley and the Brush Group, whose very considerable experience and resources are now combined to supply diesel-hydraulic and diesel-mechanical locomotives. As Beyer Peacock, through its associated company Metropolitan-Vickers—Beyer Peacock, was pre-

viously able to supply diesel-electric locomotives, it is now in the unique position of being able to offer every form of railway motive power.

Diesel locomotives supplied by Beyer Peacock (Hymek), Limited, will primarily incorporate the Maybach engine, made under licence by Armstrong Siddeley, and the Mekydro transmission, constructed in Britain under licence by J. Stone and Co., Limited; these are components fully proved in service.

### Hydraulic Transmission Advantages

In recent years, hydraulic transmission has proved increasingly successful, and has been applied to higher horsepower, it now being possible satisfactorily to handle engine outputs of up to 3,000 h.p. by this means. The German railways, with wide experience covering many classes of traffic, have practically standardised on hydraulic transmission, which has achieved a good reputation for reliability and high mileage between overhauls.

Other combinations of engine and drive can, however, be embodied by Beyer Peacock (Hymek) in a wide range of sizes. Manufacture of the locomotives will normally be undertaken by Beyer Peacock at Manchester.

The British locomotive industry has enjoyed a great and well-earned reputation for its ability to meet the diverse calls made upon it by railways everywhere. This latest development is an excellent example of its determination to keep ahead of whatever demands may arise in the future. In this respect, though all else has changed, the motives are similar to those of the founders of Beyer Peacock, whose products, to quote that eminent Victorian locomotive engineer, D. K. Clarke, "are characterised by thoroughness and finish in form, arrangement and detail." Certainly a century of locomotive distinction is a wonderful asset to these builders of locomotives of every type.

## Deltic Locomotive Performance Test

(Continued from page 3)

Region main line between Carlisle and Skipton, a distance of 82.9 miles. A detailed summary of two journeys, one in each direction of running, is given by Table 2. This is slightly abridged to give only the principal overall results. The test report bulletin contains a comprehensive graph showing the performance of the locomotive during part of an up journey from Carlisle between mile posts 307

and 308. The losses were approximately as follows:

5 per cent	..	Auxiliaries
6 per cent	..	Main generators
8 per cent	..	Traction motors

The maximum drawbar horsepower at constant speed on the level was 2,580 at 40 m.p.h., falling to 2,410 at 70 m.p.h. The corresponding overall

TABLE 1  
COMPARISON OF PERFORMANCE  
DIESEL-ELECTRIC AND STEAM LOCOMOTIVES—MAXIMUM DRAWBAR HORSEPOWERS  
(Graph 3)

Locomotive	Max. drawbar h.p.	Speed miles per hr.	Coal or Oil	Fuel particulars Calorific value B.T.U./lb.	Consumption lb. per hr.	Test conditions
English Electric Deltic—two engines ..	2,580	40	Oil	19,530	1,225	Road. Mobile Test Units.
English Electric Deltic—one engine ..	1,290	24	Oil	19,530	615	L.M. Region. Controlled.
Southern Region Diesel-electric No. 10203 ..	1,480	34	Oil	19,380	752	Road. Controlled.
British Railways Class 8, No. 71000 ..	2,090	40	Coal	13,550	6,850	Testing plant, Swindon.
British Railways Class 7, No. 70005 ..	2,040	44	Coal	13,800	5,660	Road. Controlled.
Western Region King Class, No. 6001 ..	1,825	34	Coal	14,510	5,465	Testing plant, Swindon.
STEAM LOCOMOTIVES. NORMAL MAXIMUM DRAWBAR HORSEPOWERS (Broken line curves, Graph 3)						
British Railways Class 8 ..	1,440	36	Coal	13,550	3,040	Testing plant, Swindon.
British Railways Class 7 ..	1,440	40	Coal	13,800	3,140	Testing plant, Rugby.
Western Region King Class ..	1,425	33	Coal	14,510	3,200	Testing plant, Swindon.

and 258 reckoning from London. This is a heavy grade section with the grade against the locomotive almost the entire distance of 49 miles. The elapsed time from starting to passing a point about one mile beyond the summit at Ais Gill at nearly 70 m.p.h. was 58 min. The five miles from Ormside up to Ais Gill on a rising gradient of 1 in 100 for almost the entire distance was run at a mean speed of 56 m.p.h., the minimum being 50 m.p.h.

An almost constant actual drawbar horsepower of 2,200 was sustained for long periods, and the average for the entire journey of 82.9 miles was

thermal efficiencies were 27.5 per cent at 40 m.p.h. and 25.7 per cent at 70 m.p.h. The importance of correctly matching the engine revolutions per minute on the two diesel engine governors is emphasised. Otherwise, appreciable loss in power output is likely to occur, due to unloading of one of the engines at speeds in the vicinity of the field changes.

### One-Engine Performance

When working at maximum power with one engine, the drawbar horsepower were 1,270 at

TABLE 2  
ENGLISH ELECTRIC DELTIC DIESEL-ELECTRIC LOCOMOTIVE—FULL POWER PERFORMANCE  
TEST RESULTS 642-TON TRAIN LOAD

Direction of running	Carlisle to Skipton	Skipton to Carlisle
1 Load and No. of vehicles, tons, tare ..	642.20	642.20
2 Distance, actual, miles ..	82.9	82.9
3 Ton-miles (tare weight trailing load) ..	53,222	53,222
4 Time actual running, minutes ..	91	86
5 Speed, average running time ..	54.6	57.9
6 Work done, actual horsepower hours ..	2,075	1,452
7 Average actual d.b.h.p. ..	1,943	1,743
8 Average actual d.b.t.e., tons pull ..	5.99	5.08
9 Oil, Gross C.V., B.T.U./lb. ..	19,560	19,560
10 Oil, Total used, lb. ..	1,183	876
11 Oil, lb. per available d.b.h.p. hour (on total oil) ..	0.571	0.602
12 Oil, lb. per mile (on total oil) ..	14.29	10.58
13 Oil, lb. per ton-mile (on total oil) ..	0.0222	0.0164
14 Energy transmitted to trailing load × 100 ..	22.8	21.6

NOTE. The work done actual horsepower hours and the average actual drawbar horsepower lines 6 and 7 are based on the actual time during each journey the locomotive was actually under power.

1,943 h.p. at a mean running speed of 54.6 m.p.h. With a trailing load of 642 tons, these results represent an impressive performance.

### General Observations

In concluding this general review of the test performance of this remarkable diesel-powered locomotive, some observations enumerated in the test report are given as follows: The maximum tractive effort of 45,500 lb. was sustained for 2 min. without slipping, representing an adhesion of 19 per cent. The t.e. is just below the value at which the overload relays operate to limit the total current in the traction circuit to a maximum of 2,700 amps. The current ratings for the locomotive are:

Maximum ..	2,700 amps.
20 minutes ..	2,000 amps.
Continuous ..	1,650 amps.

At full engine output with both engines, these correspond to the following tractive efforts and associated road speeds:

46,300 lb. at 19.5 m.p.h. ..	Momentarily
31,900 lb. at 31.0 m.p.h. ..	20 minutes
24,900 lb. at 41.0 m.p.h. ..	Indefinitely

When working at maximum power with both engines, the b.h.p. was 3,250, and the rail horsepower sensibly constant at 2,650, i.e. 81 per cent

25 m.p.h. and 1,100 at 60 m.p.h. This is considerably less than half the power obtained with two engines. The reason for this is given as follows:

- (1) Locomotive resistances and auxiliary power absorb a greater proportion of the b.h.p. than is the case with two engines.
- (2) Traction motors are less efficient, due to operating at half voltage.

The same maximum tractive effort is obtainable with one engine as with two engines, but a reduced speed m.p.h. The engines are exceptionally smooth running and free from vibration and required very little maintenance work throughout the trials. They are, however, somewhat noisy when running at idling speed, and this was objectionable when standing in stations. The locomotive as a whole proved remarkably trouble-free; a total of about 5,000 miles was covered during the tests without any mechanical or electrical defect of any significance.

Price reductions of £15 to £35 a ton for ferritic stainless steel strip, F117, in sizes up to but not including 15 in. wide, are announced by Firth-Vickers Stainless Steels, Limited, Europe's biggest producer of these special steels.



## SOCIAL AND PERSONAL

### B.T.C. Administration

THE British Transport Commission announces the appointment of Mr. D. S. M. Barrie, M.B.E., A.M.Inst.T., previously chief public relations officer, as assistant secretary general of the B.T.C. This appointment forms part of a reorganisation under which it has been decided to discontinue the existence of the separate general duties branch under the chief of general duties. The post of chief of general duties has been abolished and the work of the hitherto separate general duties department is being absorbed into the secretary general's office.

Mr. H. L. Preston, senior technical assistant (electrical multiple-unit equipment), has been appointed senior technical assistant (inspection), B.R. Central Staff.

Mr. J. E. Clark has been made senior assistant, area management, costs and statistics panel, B.T.C., and Mr. D. H. Dickens becomes a traffic costing officer, B.T.C. headquarters.

Dr. C. D. J. Statham, previously in charge of mining division sales, becomes general sales manager of Oldham and Son, Limited, Mr. T. J. Martin, previously in charge of S.L.I. sales division, becomes purchasing manager and Mr. H. C. Edmonds, previously export sales manager, S.L.I., becomes sales manager, S.L.I., home and export.

Air Commodore G. J. C. Paul, C.B.E., D.F.C., Royal Air Force, has been appointed secretary-general of the Air League in succession to Mr. F. N. Hillier, who retired some time ago. Air Commodore Paul, who is shortly to retire from the Royal Air Force, will take up his new duties on October 8. He is at present Director of Operational Training at the Air Ministry.

Mr. J. B. Owen, A.M.I.E.E., has been appointed contracts officer in the newly named supplies and contracts department of the Southern Region,



Mr. J. B. Owen

as from July 1. He was educated at St. Edmunds School, Canterbury, Kent, and the Birmingham Central Technical College. He joined the General Electric Co., Limited, Witton, as a student apprentice in 1932, and afterwards spent 14 months in the estimating department. For 1937-38 he was a sales engineer with Siemens Schuckert (G.B.), Limited, and at the end of 1938 he rejoined General Electric in the contract department. For four years during the war he was on loan to the G.E.C. research laboratories, North Wembley. In 1946 he joined the Southern Railway, becoming assistant-general (new works), Southern Region, in 1949 and senior technical assistant (power supply) in 1951. In 1956 he was appointed new works engineer (power supply) in charge of the electrical fixed installations for the electrification of 250 route-miles to the Kent Coast.

Mr. R. A. Slater has been appointed station-master, Kings Cross, Eastern Region, B.R., in succession to Mr. F. W. Goring, who retired recently.

We regret to record the death, at the age of 58, of Mr. A. Gent, A.M.I.E.E., deputy manager and engineer, Reading Corporation Transport Department.

Mr. John Collins, elected chairman of the Mersey and North Wales centre of the Institution of Electrical Engineers for the 1958-59 session, is commercial manager of the Liverpool and Nether-ton works of the English Electric Co., Limited.

After nearly 50 years' service Mr. C. B. Gerrard, general agent in the City of London office of Canadian Pacific Railway, retired on pension on July 31. He is succeeded by Mr. Harry McBride, assistant general agent.

Mr. W. T. N. Walford, buying manager of Dunlop Rubber Co., Limited, in Birmingham, has been elected chairman of the Birmingham branch of the Purchasing Officers' Association in succession to Mr. A. B. Smith, chief buyer and executive director of the Rover Co., Limited.

The British Transport Commission announces that Dr. F. T. Barwell, senior principal scientific officer, Department of Scientific and Industrial Research, has been appointed electric traction engineer (research), electrical engineering department, British Railways Central Staff, as from August 1.

Sir Wilfred Neden, C.B., C.B.E., Chief Industrial Commissioner of the Ministry of Labour, will retire from the public service on August 24. With the approval of the Prime Minister, the Minister of Labour has appointed Mr. P. H. St. John Wilson, C.B., C.B.E., to succeed him with a rank equivalent to Deputy Secretary.

The Minister of Transport and Civil Aviation, with the approval of the Prime Minister, has appointed Mr. M. M. V. Custance to be a Deputy Secretary in the place of Mr. A. H. Wilson, C.B., C.B.E., who is retiring on July 31 and who is taking up a new appointment in the Ministry as adviser on commercial air transport. Mr. Wilson entered the department of Civil Aviation of the Air Ministry in 1937 and went with that department to the Ministry of Civil Aviation on its formation in 1945. For 10 years, from 1946 to 1956, he was an Under-Secretary successively in charge of Ground Services and Air Services before being appointed a Deputy Secretary of the combined Ministry of Transport and Civil Aviation in succession to Sir George Cribbitt in 1956. Mr. Custance entered the Civil Service in 1938, after a distinguished career at Oxford. From 1941 he served as a pilot in the Royal Air Force. He then returned to the Ministry of Transport and has had all-round experience in connection with roads, shipping policy, road transport and air services. He became an Assistant Secretary in 1948, spent a year at the Imperial Defence College in 1952 and took charge of air services on promotion to Under-Secretary in the spring of 1956.

### Milford Haven Conservancy

FOLLOWING his appointment of Lord Dynevor to be chairman of the Milford Haven Conservancy Board, the Minister of Transport has now appointed a further nine members to the Board which, together with appointments made by other authorities, completes the membership of the Board with the exception of one vacancy which the Minister does not propose to fill for the time being. Membership of the Board is as follows:

**Chairman:**  
Lord Dynevor, M.C.; appointed by the Minister.  
**Members:**  
Mr. F. D. Arney (general manager, Port of Bristol Authority); appointed by the Minister.  
Mr. R. L. Hancock, A.M.I.N.A.; appointed by the Minister after consultation with the Milford Haven Trawler Owners.  
Mr. E. C. Mathias, O.B.E. (regional secretary, T. and G.W.U.); appointed by the Minister after consultation with bodies representing organised labour in Wales.  
Comdr. R. H. Bristowe, D.S.O., R.N. (Ret.) (chairman, Milford Docks Co., Limited); appointed by the Minister on the recommendation of the Milford Docks Company.  
Mr. E. Asquith, A.M.I.E.E., Assoc. M.C.T. (manager, Esso refinery, Milford Haven); appointed by the Minister on the recommendation of the Esso Petroleum Co., Limited.  
Mr. R. B. Southall, C.B.E., J.P. (general manager, B.P. Refinery (Llandarcy), Limited); appointed by the Minister on the recommendation of B.P. Trading, Limited.  
Sir Leighton Seager, Bt., C.B.E., J.P. (past president, Chamber of Shipping); appointed by the Minister after consultation with the General Council of British Shipping.  
Colonel G. F. Kelway, T.D., D.L., J.P. (director of shipping agents); appointed by the Minister after consultation with the General Council of British Shipping.  
Mr. D. L. Thomas (manager for shipowners); appointed by the Minister after consultation with the General Council of British Shipping.  
Captain J. G. B. Morrow, C.V.O., D.S.C., R.N.; appointed by the Admiralty.  
Captain D. Dunn; appointed by the Trinity House.  
Mr. W. H. Vaughan, C.B.E., J.P., D.L.; appointed by the National Parks Commission.  
Mr. J. Walters; appointed by the South Wales Sea Fisheries District Committee.  
Alderman J. John, appointed by the County Council of Pembroke.  
Alderman L. J. Meyler, O.B.E.; appointed by the County Council of Pembroke.  
Alderman R. S. Wade; appointed by the County Council of Pembroke.  
It is expected that the first meeting of the Board will take place locally on August 27.

Arising out of the transfer of the Northern Ireland section of the Great Northern Railway to the Ulster Transport Authority, which is to take place on October 1, it has been arranged, so as to facilitate the transfer, that Mr. J. C. Bailie, M.Inst.T., presently traffic manager of the G.N.R.B., be seconded in the interim to the service of the Authority. He will, however, until the transfer date, also continue to discharge his duties as traffic manager of the G.N.R.B.

The Minister of Transport has appointed Alderman G. W. Hutson to be a member of the Transport Users' Consultative Committee for the East Midlands area to represent local authorities. Mr. E. W. Craig is to be a member of the committee for Scotland, representing labour, and Major-General G. W. Hodgen, C.B., O.B.E., a member of the committee for the West Midlands area, representing industry. Major-General Hodgen is transport manager of Mitchells and Butlers, Limited, Birmingham.

Mr. Alexander Petrie, assistant to the chief commercial manager (passenger), Scottish Region, B.R., has retired after 49 years' service with British Railways. Mr. Petrie began his railway career on the former Caledonian Railway in 1909. In 1950 he became clerk-in-charge of the passenger rates and fares section of the L.M.S.R. commercial superintendent's office in Glasgow and in that capacity represented the Scottish Region on the panel of passenger commercial assistants dealing with the passenger charges scheme. He was appointed assistant to the chief commercial manager (passenger) in 1953.



Mr. S. G. Hearn, C.V.O., O.B.E., assistant general manager, Eastern Region, with his wife, son and daughter at Buckingham Palace, after receiving the C.V.O.

We regret to record the death of Mr. F. C. Sturrock, who was Minister of Transport in South Africa from 1939 to 1948. He was 76.

Mr. P. S. Beale has been appointed a director of the British Oxygen Co., Limited. He was formerly chief cashier, Bank of England. Mr. R. J. Barritt has been appointed chief executive of the B.O.C., engineering division.

We regret to record the death of Mr. H. G. Campbell, chairman and joint managing director of Benjamin Electric, Limited. Mr. Campbell, recognised as a worldwide leader in the electric lighting industry, was 71. He had been chairman of the company for 47 years and until 1957 was chairman and managing director of Holopane, Limited. He was always a staunch supporter of the Illuminating Engineering Society and served on numerous committees associated with the electrical industry; he was best known in the motor industry as a manufacturer of electrical and other equipment, products which the company discontinued to concentrate upon industrial lighting equipment.



# The choice of the Passenger Transport Industry

## Connolly Leather

CONNOLLY BROS (CURRIERS) LIMITED

CHALTON STREET · EUSTON ROAD · LONDON N.W.1

TELEPHONE: EUSTON 1661-5

## SILVER ROADWAYS LTD.

Reliable Trunk Services to all Parts

<b>EXETER</b> Peamore Garages, Alphington KENNEDY 485	<b>CARDIFF</b> 10 Dumfries Place CARDIFF 21631	<b>GLASGOW</b> 12 Dixon Street, C.2 CITY 3381
<b>BIRMINGHAM</b> 323 High St., West Bromwich, Staffs. WEST BROMWICH 3801	<b>SWANSEA</b> Exchange Buildings SWANSEA 54171/5	<b>LIVERPOOL</b> 11 Old Hall Street, Liverpool, 3 CENTRAL 6386
<b>LLANELLY</b> Morfa Works, Llanelli LLANELLY 4302	<b>BRISTOL</b> 70 Prince Street BRISTOL 22315	<b>NOTTINGHAM</b> Pavilion Building, Pavilion Road West Bridgford NOTTINGHAM 83481
<b>LONDON</b> 22-24 Bermondsey Wall West, S.E.16 BERMONDSEY 4833		

### OFFICIAL NOTICE

#### NORTH WESTERN GAS BOARD MANCHESTER GROUP

#### FOREMAN—CENTRAL REPAIR DEPOT TRANSPORT DEPARTMENT

Applications are invited for the above pensionable appointment at the Central Repair Depot in Salford at a salary within Grade A.P.T. 7 (£705/£785 per annum).

The person appointed will be responsible to the Group Transport Officer for the maintenance and overhaul of a fleet of approximately 250 vehicles and items of mobile plant. A recognised qualification in automobile or mechanical engineering would be an advantage.

Detailed applications, quoting "Vacancy No. 193," should reach the General Manager, Manchester Group, North Western Gas Board, Town Hall, Manchester, 2, within 14 days.

### CLASSIFIED ADVERTISEMENTS

**RATES.**—The minimum charge for classified advertisements is 7s. for 14 words or less, and 6d. for each additional word. The name and address of the advertiser is charged at the same rate. If a box number is used 2s. extra is charged to cover our name and address and postage. If set in paragraph form each paragraph is estimated separately. Official Notices and semi-display in the classified columns are charged at the rate of 45s. per single column inch.

**CLASSIFIED ADVERTISEMENTS** should be addressed to THE MANAGER, Classified Advertisements, MODERN TRANSPORT, Russell Court, 3-16 Woburn Place, London, W.C.1.

#### SITUATION WANTED

ASSISTANT Transport Manager, 38, A.M.Inst.T., A.M.I.T.A., M.Inst.Pkg. etc., experienced rail, road, C-licensing, etc., seeks improved position with industrial concern Southern England. Write Box No. 3794, MODERN TRANSPORT, 3-16 Woburn Place, London, W.C.1.

#### SITUATION VACANT

SKILLED or semi-skilled Motor Mechanic required for large engineering firm near Wembley. Pension fund, sports club, canteen, etc. Apply with full details of experience to Box No. 3793, MODERN TRANSPORT, 3-16 Woburn Place, London, W.C.1.

### A UNIQUE HISTORY



PROFUSELY ILLUSTRATED

HAVE YOU YOURS?

22s. INCLUDING POSTAGE AND PACKING

FROM PUBLISHER

MODERN TRANSPORT

3-16 WOBURN PLACE, W.C.1

A Subscription to

MODERN TRANSPORT

will keep you in touch  
with all British and Foreign  
transport developments



## IMPORTANT CONTRACTS

## Atlantean for Potteries

AS foreshadowed by its chairman, Mr. Raymond Birch, during the company's recent diamond jubilee celebrations, Potteries Motor Traction Co., Limited, intends to acquire 75 Leyland Atlantean double-deck buses in the course of the next year or so. The Atlantean is a rear-engined chassis for which high-capacity front-entrance Metropolitan-Cammell-Weymann bodies are being developed. P.M.T. has already placed orders for 45 vehicles, five for delivery this year and 40 in 1959, and is contemplating ordering the remaining 30 for delivery in 1960.

## L.T. Engineers Wagons

London Transport has placed a contract with the Gloucester Railway Carriage and Wagon Co., Limited, for six 30-ton bogie flat wagons, and five 20-ton bogie rail wagons for engineers' use. The value of the contract is approximately £39,000 and the wagons will be delivered by December.

## Large Multi-bucket Orders

Orders valued at £70,000 for Bennes-Marrel multi-bucket hydraulic lifting and haulage units—including one for the supply of a fleet to the Steel Company of Wales—are announced by Aero Maintenance Equipment, Limited, which is the sole concessionaire in this country. Units are also being supplied to Trinoll of Trinidad, Bridgwaters of Epsom, and Metal Agencies, Bristol. Aero Maintenance is now manufacturing the complete apparatus at its factory in Cumberland.

## More Perkins-Engined Taxis for Brussels

The Brussels taxicab company, Bruxelloise d'Auto-Transports, has ordered 75 Chevrolets fitted with Perkins P4 diesel engines from General Motors. The British P4 diesel engines—capable of developing 58.5 b.h.p. at 3,000 r.p.m.—are being installed in the new cars at the General Motors factory at Antwerp. The Brussels company operates a passenger fleet of over 400 vehicles. Since the war, it has purchased 650 Chevrolets and more than 350 have been fitted with Perkins diesel engines.

## Mechanisation in Brazil

The Brazilian Government has placed an order for 572 industrial fork-lift trucks with the Yale and Towne Manufacturing Company, Philadelphia, U.S.A., it was announced recently. This is said to be the largest single export order for fork-lift trucks ever placed with any manufacturer. The purchase has been aided by a loan from the Export-Import Bank and the machines will be used in an overall port modernisation programme being carried out in Brazil. Delivery of the trucks, which has already begun, will be completed before the end of the year.

## Railpads Simplify Signalling

An order for 61,000 neoprene synthetic rubber pads for precast concrete sleepers has been placed by South African Railways with Dunlop South Africa, Limited. Because of the insulating properties of the rubber, which means that steel rails can now be used as conductors for electric signalling, it is estimated that the railway authorities will save up to £1 million on new signalling schemes at present under consideration. The pads have been designed and developed by railway technicians; they are of the envelope type and fit between the rail and the clips fixing it to the sleeper.

## Cameroons Road Construction Contract

Costain (West Africa) has been awarded a contract valued at £497,470 for the construction of the Kumba-Mbonge road for the Southern Cameroons Government. This road, which will be more than 30 miles long and cut through uncultivated bush country, will open up the surrounding fertile areas and enable produce to be conveyed more easily to the towns. Included in the contract is the construction of 26 bridges—25 of reinforced concrete and one consisting of two 100-ft. spans in trussed steel which crosses the River Meme. Preliminary works are in hand and work on the road, which will take 2½ years to complete, is expected to start in the dry season.

## Edgar Allen Trackwork Contracts

Edgar Allen and Co., Limited, trackwork department has obtained orders for the supply and installation of dock rail on berths 11 and 12 at Mombasa Harbour—probably the first dock rail section to be supplied in Africa. The supply of trackwork for the melting shop of the new steel plant at Durgapur, India, for ISCON involving a large number of ordinary steel turnouts, cast manganese steel crossings and cast steel rails for the furnace fronts, is well under way, while two large orders for the supply of diamond crossings with single slips in 88-lb. C.G.R. section, and switches and crossings in 80-lb. F.B. section in medium manganese steel have also been received from Ceylon.

## TENDERS INVITED

THE following items are extracted from the Board of Trade Special Register Service of Information. Inquiries should be addressed, quoting reference number where given, to the Export Services Branch, Board of Trade, Lacon House, Theobalds Road, London, W.C.1.

**August 15—Ethiopia.**—International Co-operation Administration for 12 eight- or nine-passenger buses, four four-wheel-drive small ambulances, five 4-ton four-wheel-drive pick-up trucks, one recovery vehicle and two diesel-engined 5-ton four-wheel-drive lorries with 20-in. high sides. Tenders to the United States Operations Mission to Ethiopia, Post Office Box 259, Addis Ababa. (ESB/19271/58/ICA.)

**August 16—India.**—Government of Andhra Pradesh for quantities of CONSTRUCTIONAL EQUIPMENT including road rollers, tractors, dumpers and so on. Photocopies of tender documents from Export Services Branch, B.O.T., price 7s. (ESB/19269/58.)

**August 18—Union of South Africa.**—Cape Provincial Administration for one self-propelled motor grader of not less than 23,000 lb., one crawler tractor, drawbar pull not less than 14,000 lb. at 1.75 m.p.h. and two 35- to 45-h.p. tractor-semi-trailer outfits. Tenders to the Cape Provincial Administration Cape Town. (ESB/19234/58.)

**August 19—Greece.**—State Procurements Service for several hundred LEAD-ACID BATTERIES of various sizes. Photocopies of tender documents from Export Services Branch, B.O.T., price 6s. (ESB/19120/58.)

**August 19—India.**—Director-General of Supplies and Disposals for one electrically operated 400-440 volt three-phase 50-cycle pit-type MULTI-RAIL TRAVELLER, with useful length of 65 ft. and capacity of 150 tons load. Tenders to the Director-General of Supplies and Disposals, Shahjahan Road, New Delhi. (ESB/18948/58.)

**August 22—Union of South Africa.**—South African Railways for about 18,000 AUTOMATIC COUPLERS and numerous coupler components. Photocopies of tender documents from Export Services Branch, B.O.T., price 7s. (ESB/19141/58.)

**Export Opportunity—Austria.**—Charles Keller, G.m.b.H., Vienna XII, Schindler 12, would like to get in touch with United Kingdom manufacturers of pullovers with a view to taking over their representation in Austria. (ESB/19426/58.)

## SHIPPING and SHIPBUILDING

## Effect of Higher Dock Wages

IT emerged for the first time on the opening day of the hearing before the court of inquiry set up by the Minister of Labour to investigate the causes and circumstances of the present wage dispute in the docks industry that the "substantial" wage claim put forward was of the order of 30s. per week. The inquiry is presided over by Lord Cameron, a judge of the Court of Session. Mr. R. H. Senior, chairman of the National Association of Port Employers, said that the employer members of the National Joint Council maintained that it was a paramount duty to consider the effect of an increase in wages on the industry's customers. It would be wrong at the present time to ask any section of customers to pay more and that the industry's largest customer, the British shipowner, simply could not afford to pay more. Mr. Senior said that the union members had not proved their point that the docks wage rate was low compared with industry generally. "The criterion is the average earnings figure," he said, "and earnings in the docks are high, largely because it is a piece-work industry."

Mr. A. M. M. Crichton, of the employers' delegation, said that the tramp shipping industry was running at a loss and was probably in for a two- or three-year depression. Laid-up shipping was unlikely to find employment for a long time, short of a crisis, and the cancellation of building of new ships was evidence of the state of depression. Sir Leslie Ford, general manager of the Port of London Authority, said that if there was an increase of 1 per cent in dockers' pay rates, that would cost the P.L.A. something like £50,000 for the dockers and another £100,000 in consequential increases for those who worked closely with the dockers and a great number of clerical and supervisory staff. The total increase would be of the order of £400,000 or £500,000. So far as the Port of London was concerned it could not stand this. Mr. Senior said there would be no alternative but to pass the higher costs on to customers.

## Sales to Foreigners Allowed

RESTRICTIONS on the sale of British-owned ships to foreign buyers are to be lifted, the Minister of Transport has announced. Free transfer or mortgage of British ships to all countries abroad will be permitted for the first time since 1939, the exceptions being sale of certain categories of ships to Communist countries and of former naval craft. In addition the procedure whereby ships could be sold abroad for scrap only if the British Iron and Steel Corporation were not prepared to match the foreign price will be discontinued.

## New Ships for Argentina

THE Argentine State-owned shipping companies, Flota Mercante del Estado and Flota Argentina de Navegacion de Ultramar, announce they will each order three 10,500 gross-ton refrigerated cargo vessels from the West German shipbuilders Ottensener Eisenwerk A.G. of Hamburg, subject to the final approval of the Argentine Government. The six ships would each have four general holds, one refrigerated, and two deep tanks for vegetable oils. Powered by one 10,500-h.p. diesel engine, they would develop 17 knots and would have accommodation for 12 passengers. Delivery would be in 1960.

## Boycott of Panlibhon Flags

MEETING in Amsterdam last week, the twenty-fifth congress of the International Transport Workers' Federation decided to devise a boycott of ships flying flags of convenience. Mr. T. O'Leary, national dock group secretary of the Transport and General Workers' Union, and Mr. T. Yates, secretary of the National Union of Seamen, will alternate as chairmen of the Federation's international fair practices committee, which is to supervise the boycott. At a press conference Mr. Omer Becu, general secretary of I.T.F., said the proposed boycott would be the biggest action ever launched by the Federation. It was expected to last between a week and nine days and its date of starting would be kept secret as long as possible.

## Aluminium Launch for Jamaica

LATEST light alloy launch completed by Universal Shipyards (Solent), Limited, has been built for Port Esquivel Terminals, Jamaica. Port Esquivel is operated by Sproston's (Jamaica), Limited, on behalf of the owners, Alumina Jamaica, Limited, a fully owned subsidiary of Aluminum Co. of Canada, which ships alumina to Canada, Norway and Sweden. As it may occasionally be necessary for pilots to sleep on board, the *Katharine* has been designed slightly larger than the standard craft, being 35 ft. long overall, beam 10 ft. 8 in., draught of 2 ft. 9 in. She is constructed of 10 s.w.g. light alloy to specification N.S.5., and her decks are of positive grip pattern light alloy to give a safe non-skid surface. Materials have been supplied by the Northern Aluminium Co., Limited, Banbury. A single Perkins S.6M diesel engine developing 100 h.p. at 2,000 r.p.m. gives her a service speed of 13-14 knots and is equipped with a heat exchanger unit to provide closed circuit fresh water cooling. A heavy duty Firestone solid rubber fender is fitted around the gunwale.

*Katharine* carries a Kelvin Hughes echo sounder type MS 26A., Pye radio telephone, and a Pyrene CO<sub>2</sub> gas remote-control fire-extinguishing installation above the engine and fuel tanks. Topsides, superstructure and decks are left unpainted, and the polished alloy in contrast to the dark blue boot-top gives the launch a distinctive appearance.

## FINANCIAL RESULTS

NOTES on the trading results, dividends and financial provisions of companies associated with the transport industry are contained in this feature, together with details of share issues, acquisitions and company formations or reorganisations.

## Atkinson Lorries (Holdings)

The ordinary dividend of Atkinson Lorries (Holdings), Limited, for the year ended March 31, 1958, is 20 per cent (same) on capital increased by an issue of shares for cash. Group profits, including the profits of the two new African subsidiaries for 11 months, were £44,420 (£51,483) after tax of £63,521 (£54,862). Amount attributable to holding company £44,420 (£51,483).

## Banks and H.P. Companies

It was made known last week that the National Provincial Bank is making a £2,500,000 cash bid for the capital of North Central Wagon and Finance Co., Limited. The offer is 90s. for each of North Central Wagon 2,105,333 ordinary £1 shares. This is the third of the "Big Five" banks to enter the hire-purchase finance field in a week. Barclays Bank is buying 1,000,000 £1 shares in United Dominions Trust, Limited, at £4 each and Westminster and Martins are each taking up nearly 2,500,000 ordinary 5s. shares at 16s. each in Mercantile Credit Co., Limited.



## SWITCHGEAR

for another 31 substations

33 kV Class MF.36 switchgear  
at Hither Green Substation

Following on the Contract for 33 kV 750 MVA metal-clad switchgear for 20 substations for the British Railways Southern Region change of frequency scheme, BTH are now supplying a further 111 equipments for 31 substations for the extension of electrification to the Southern Region Kent Coast Lines.

## BRITISH THOMSON-HOUSTON

THE BRITISH THOMSON-HOUSTON COMPANY LIMITED · WILLESDEN · ENGLAND

an A.E.I. Company

AS192



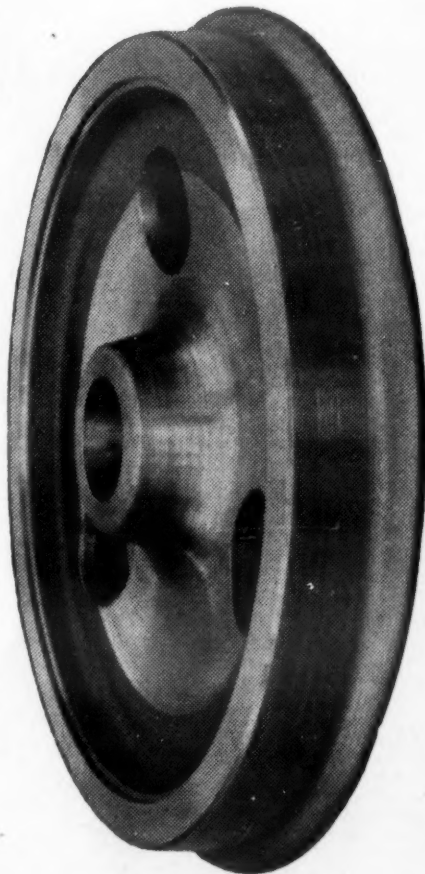
A Branch of The United Steel Companies Limited.

THE ICKLES, ROTHERHAM, YORKSHIRE

RAILWAY WHEELS, TYRES,  
AXLES, SPRINGS,  
FORGINGS

As one of the principal makers of steel railway materials in the Commonwealth, Steel, Peech & Tozer are playing an important part in the modernization schemes of British Railways and of railways overseas. Of their total production of 100,000 tons per annum of railway materials—steel wheels, tyres, axles, springs and forgings, some 30,000 tons are exported to railways in five continents.

Seventy years' manufacturing experience and a constant search for new methods ensure the reliability and excellence of these materials.



SP 206